

# Flora of New South Wales

NATIONAL HERBARIUM OF NEW SOUTH WALES

No. 58. LORANTHACEAE

1971



## Conspectus of Families of Vascular Plants represented in the Flora of New South Wales

(The account of each family, or consecutive group of families as issued, will appear with separate pagination; the names of those families that have been published to date are in italics.)

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NEW SOUTH WALES  
DEPARTMENT OF AGRICULTURE

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# FLORA OF NEW SOUTH WALES

formerly  
Contributions from the  
New South Wales National Herbarium  
Flora Series

**No. 58. Loranthaceae**

**1971**

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# FLORA OF NEW SOUTH WALES

Produced under the Direction of

K. MAIR

former Director and Chief Botanist  
National Herbarium of New South Wales  
Royal Botanic Gardens  
Sydney

No. 58. LORANTHACEAE

*by*

B. A. BARLOW

EDITOR: MARY D. TINDALE

Formerly produced under the direction of R. H. Anderson, 1961-1964



## 58. LORANTHACEAE

By B. A. Barlow\*

Flinders University of South Australia, Bedford Park, South Australia

*Flowers* mostly more than 5 mm long, hermaphrodite or when unisexual mostly dioecious; perianth of 2 whorls. *Calyx* reduced to a lobed or truncate limb at the apex of the ovary, without vascular bundles. *Corolla* with free or united segments, usually regular, 4- to 6- (to 9-) merous, valvate. *Stamens* as many as and opposite the petals, epipetalous; anthers primarily 2- or 4-locular (sometimes with transverse partitions), mostly basifix, immobile and continuous with the filament but sometimes dorsifixed and then usually versatile, opening longitudinally; pollen mostly trilobate, rarely triangular or spherical. *Ovary* inferior, 1- to several-locular, with or without a central placental column (mamelon); ovules absent; sporogenous tissue massive, located in the mamelon or at the base of the ovarian cavity. *Fruit* usually a berry (rarely dry or drupaceous); viscous layer (when present) outside the vascular bundles.

*Hemiparasitic aerial stem-parasitic shrubs or terrestrial root-parasitic shrubs or trees.* Leaves opposite in most genera, curvinerved or pinninerved. In the aerial members connection with the host may be by means of runners with several or numerous haustoria, or by a single haustorium.

A family of about 65 genera and 900 species, widely distributed in the tropics of both hemispheres, with fewer genera and species in temperate regions. There are 10 genera and 62 species in Australia, of which 8 genera and 27 species occur in New South Wales. There are no members in Tasmania. The family is of little economic importance; some species sometimes cause local damage in forestry areas or orchards; some species are relished by stock but are of insufficient abundance to have much fodder value.

The family is treated here in the strict sense, that is, with the taxa formerly included in subfamily Viscoideae distinguished as the Viscaceae, which is treated as Family 58A in this series. The Australian Viscaceae may be distinguished from the Loranthaceae by their minute (less than 2 mm long), unisexual, monochlamydous flowers. For further discussion of the differences see Barlow in Proc. Linn. Soc. N.S.W. 89: 268-272 (1964). For a revision of the Australian and New Zealand Loranthaceae see Barlow in Austral. J. Bot. 14: 421-499 (1966).

1. Corolla-segments united to the middle or higher (sometimes more deeply divided on one side).
  2. Inflorescence a simple, 2-flowered umbel (rarely reduced to a single flower).
    3. Runners present. Corolla 5-merous, ligulate ..... *Benthamina* 8.
    - 3.\* Runners absent. Corolla 6-merous, not ligulate ..... *Lysiana* 3.
  - 2.\* Inflorescence a raceme (sometimes subumbellate) of single flowers or triads (dichasia).
    4. Flowers in triads. Leaves opposite ..... *Amylotheca* 2.
    - 4.\* Flowers not in triads. Leaves alternate or scattered ..... *Dendrophthoe* 7.
- 1.\* Corolla segments free throughout.

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\* The author wishes to thank Dr L. A. S. Johnson for valuable advice and discussion in the revision and enlargement of the original text. I am also indebted to Mrs Margaret Rodd for interpolating a large number of specimens into the manuscript, to Mr D. F. Blaxell for checking and adding certain references and to Dr Mary Tindale for editorial assistance.

5. Low terrestrial shrub. Bracts three under each flower ..... *Atkinsonia* 1.  
 5.\* Aerial stem-parasite. Bracts not three under each flower.  
 6. Runners present. Anthers dorsifixed, versatile ..... *Muellerina* 4.  
 6.\* Runners absent. Anthers basifixed, immobile.  
 7. Flowers enclosed between two enlarged foliaceous bracts more  
     than 2 cm long ..... *Diplatia* 6.  
 7.\* Flowers not enclosed between enlarged foliaceous bracts .. *Amyema* 5.

### 1. ATKINSONIA F. Muell.

*Inflorescence* an axillary raceme with a basal involucre of a few pairs of decussate scales; bracts three under each flower, persistent. *Corolla* of 6 to 8 free lobes. *Anthers* dorsifixed, versatile, 2-locular at maturity; pollen spherical. *Style* persistent for some time, eventually articulate at the base. *Fruit* drupaceous. *Terrestrial root-parasitic shrubs* with opposite pinninerved leaves.

A primitive and relic monotypic genus, endemic in New South Wales.

*Atkinsonia ligustrina* (A. Cunn. ex Lindl.) F. Muell., *Phytogr. Austral.* 5: 34 (1865); Benth., *Fl. Austral.* 3: 388 (1866); Moore & Betche, *Handb. Fl. N.S.W.* 228 (1893); Beadle, Evans & Carolin, *Handb. Vasc. Pl. Syd. Dist. & Blue Mts* 310 (1963); Barlow in *Austral. J. Bot.* 14: 426 (1966).

**SYNONYMY:** *Nuytsia ligustrina* A. Cunn. ex Lindl., *Bot. Reg.* 25, Swan River Appendix 39 (1839); *Loranthus atkinsoniae* Hook. f., *IC. Pl. t.* 1319 (1882) (as "atkinsonae"); *Gaiadendron ligustrinum* (A. Cunn. ex Lindl.) Engl., *Pflanzenfam. Nachtr.* 125 (1897); Blakely in *Proc. Linn. Soc. N.S.W.* 47: 204, t. 28 (1922).

**DISTRIBUTION:** Restricted to dry sclerophyll communities on sandstone on the Blue Mountains and Mellong Range (eastern part of the Central Tablelands and western edge of the Central Coast). Several host species were recorded by Menzies & McKee in *Proc. Linn. Soc. N.S.W.* 84: 118 (1959).

Glabrous. *Stems* angular. *Leaf-lamina* lanceolate, 3-5 x 0.6-1 cm, recurved at the margin, attenuate at the base; petiole c. 2 mm long. *Inflorescence* solitary in the axil; involucral scales in 2-4 pairs, persistent, rounded, up to 1.5 mm long; axis 5-10-(30) mm long, angular, bearing 2-6 flowers; pedicels c. 1 mm long; bracts oblong, rounded, c. 2 mm long, the central bract decurrent to the base of the pedicel. *Calyx* cylindrical; limb 0.5 mm long, irregularly toothed. *Corolla* in the mature bud 6-8 mm long, weakly clavate. *Anthers* oblong, acute, 2 mm long; free part of the filament 1.5-2 mm long. *Fruit* ovoid, c. 12 mm long. *Chromosome number:*  $n = 12$  (Barlow in *Proc. Linn. Soc. N.S.W.* 88: 154 (1963)). *Fl. Nov.-May; fr. Feb.*

**CENTRAL COAST:** 2-3 miles [3-5 km] W. of Putty road, 2 miles [3.2 km] N. of Grassy Hill, *Rodd* 40, 2.1965 (79339); 2 miles [3.2 km] N. of Bilpin School, *Constable* 11.1959 (79341); Head of Grose Vale, *Blakely*, *Bott* & *Shires* 9.1925; Linden, *Maiden* & *Canbage* 11.1904 (79352). **CENTRAL TABLELANDS:** c. 3 miles [4.8 km] W. of Mt Cameron, 17 miles [27 km] N. of Bell, *Pickard* & *Black* JP735, 11.1969 (88851); Mt Tambo Limb, NW. of Newnes State Forest, *Constable* 12.1948 (27338); c. 2½ miles [4 km] N. of Marrangaroo Railway Station, *Blakely* & *Chisholm* 5.1922 (7923); 1 mile [1.6 km] NE. of Tesselate Hill, Mt Irvine, c. 15 miles [24 km] NE. of Mt Victoria, *Constable* 4198A, 4.1963 (92321); Bell, *Hamilton* 1.1912 (79343); Mt Wilson, *Gregson* 12.1897 (79358); Mt Wilson, *Maiden* 2.1898 (20538); Du Faur's Rocks to Wollangambe Creek, Mt Wilson, *Johnson* 9.1949 (79348); 1 mile [1.6 km] SW. of Mt Wilson at foot of Zigzag, *Constable* 11.1958 (48298); 1 mile [1.6 km] SW. of Mt Wilson at foot of Zigzag, *Barlow* 219, 12.1960 (BRIU 7); 1 mile [1.6 km] SW. of Mt Wilson at foot of Zigzag, *Peacock* 11.1961 (BRIU 672); at the foot of Zigzag road, Mt Wilson, *Stauffer* (5696), *Johnson* & *Constable* 2.1964 (99414); Mt Wilson road, *Blakely* 6.1921 (79345, 79353); W. of Bilpin, 3 miles [4.8 km] E. of Mt Wilson turnoff, *Stauffer* 5695, *Johnson* & *Constable* 2.1964 (99413); Mt Tomah, *Rodd* 8.1967 (100272); Mt Tomah, *Maiden* 11.1898 (20538); Eastern foot of Mt

Tomah. *McKee* 907, 4.1954 (79346); Mt Caley, 9 miles [14 km] E. of Mt Victoria, *Constable* 7018, 8.1966 (94259); Mt Victoria, *Fletcher* 12.1892 (79361); Mt Victoria, on the way to the coal mine, *Fletcher* 12.1892 (79354); 10 milcs [16 km] NNE. of Leura on Mt Hay road, *Constable* 4987, 8.1964 (72383); Megalong Valley, c. 10 miles [16 km] S. of Blackheath, *Constable* 5.1960 (79350); Wentworth Falls, *Deane* 11.1889 (79359); Wentworth Falls, *Bowden* 6.1968 (100273); Dante's Glen, [c. 1 mile [1.6 km] NW. of Lawson], *Collie* (79364); Lawson, *Weber* 12.1880 (79356); Lawson, *Hamilton* 11.1901 (79342); Lawson, *Hamilton* 11.1913 (79363); Lawson ridge, below Trig, *Bowden* 11.1969 (88508); Hazelbrook, *Schleicher* 11.1953 (79347); Woodford, *Maiden* 1.1899 (79362); Woodford, *McKee* 883, 8999, 9000 & *sine numero*, 12.1953, 3.1962, 3.1962, 2.1952 (26320, 79340, 79344, 79355); Blue Mts, *Camfield* 12.1894 (79357).

## 2. AMYLOTHECA Tiegh.

*Inflorescence* primarily an axillary subumbellate raceme of several decussate pairs of dichasial (triads) with the central flowers sessile and the lateral flowers pedicellate but through reduction sometimes a simple raceme or even a 2-flowered simple umbel; bracts primarily single under each flower but sometimes more in reduced inflorescences. *Corolla* 6-merous, regular, the segments united to the middle or higher. *Anthers* linear, basifix, immobile, 4-locular; pollen trilobate. *Style* articulate 1.5-5 mm above the base; style base pyramidal. *Aerial stem-parasites* (possibly sometimes initially terrestrial) with runners and opposite pinninerved leaves.

A genus of five species occurring in eastern Australia, New Guinea and Melanesia. For discussion of the circumscription of the genus see Barlow in Austral. J. Bot. 14: 432 (1966). Only one species extends into New South Wales.

*Amylotheaca dictyophleba* (F. Muell.) Tiegh. in Bull. Soc. Bot. France 41: 262 (1894); Beadle, Evans & Carolin, Handb. Vasc. Pl. Syd. Dist. & Blue Mts 311 (1963); Barlow in Austral. J. Bot. 14: 439 (1966).

**SYNONYMY:** *Loranthus dictyophlebus* F. Muell., Rept. Burdek. Exped. 14 (1860); Benth., Fl. Austral. 3: 391 (1866); Moore & Betche, Handb. Fl. N.S.W. 228 (1893); F. M. Bail., Queensl. Fl. 5: 1378 (1902); Blakely in Proc. Linn. Soc. N.S.W. 50: 11, t. 6 (1925); *Aciella dictyophleba* (F. Muell.) Tiegh. in Bull. Soc. Bot. France 42: 87 (1895); *Elytranthe dictyophleba* (F. Muell.) Engl., Pflanzenfam. Nachtr. 126 (1897); *Loranthus tenuisilius* F. M. Bail. in Bot. Bull. Dept. Agr. Queensl. 16 (1903), nom. illegit. non Tiegh. (1895); *Loranthus beauverdiana* F. M. Bail. in Queensl. Agr. J. 21: 294 (1908).

**DISTRIBUTION:** North and Central Coast south to Nowra, mostly in rainforest communities, parasitic on a wide range of host species; it may be expected in the north of the South Coast subdivision. Also throughout coastal Queensland and in New Guinea.

Glabrous. *Leaf-lamina* lanceolate to elliptical, (6)-8-12 x 2-4-(6) cm, usually shining above, dull below, acute to rounded at the apex, attenuate to contracted at the base; petiole rather obscure, winged, 2-8 mm long. *Inflorescences* 1-3 in the axils; axis 5-12-(28) mm long, bearing 1-6 decussate, more or less subumbellate pairs of triads or single flowers on peduncles (3)-5-7-(10) mm long; pedicels of the lateral flowers of the triads (when present) 2-4 mm long; bracts single under the flowers or sometimes 2 or 3 where the triads are reduced to single flowers, triangular, acute, 1 mm long. *Calyx* narrow-cylindrical; limb obscure, 0.3 mm long. *Corolla* in the mature bud (28)-32-38 mm long, thin, inflated in the middle, clavate and acute at the apex; petals in the open flower more or less unequally united to about the middle. *Anthers* 3-4 mm long; free part of the filament 2-3 mm long. *Style* articulate 1-3 mm above the base. *Fruit* globular, 10-12 mm in diameter. *Chromosome number:*  $n = 12$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 154 (1963)). Fl. July-Jan.; fr. Feb.-May.

NORTH COAST: Razorback, Tweed Heads, *Barlow* 166, 9.1960 (BRIU 8); Cudgen, *McKee* 9519, 7.1962 (79338); Acacia Creek, *Boorman* 2.1905 (79329); mouth of Brunswick R., *Schodde & Hayes* 3548, 5.1964 (71472); Brunswick Heads, *Pickard & Blaxell* 305, 4.1969 (87945); Byron Bay, *Boorman* 9.1909 (79330); N. of Dorrroughby, Whian Whian State Forest, *Burke* 10.1953 (79331); Minyon Falls road, Whian Whian State Forest, 15 miles [24 km] N. of Lismore, *Constable* 10.1961 (67448); Richmond R., *Betcke* 8.1884 (79332); Richmond R., *Fawcett* c. 1876 (79333); Boat Harbour Park, Wilson's Creek, between Bexhill and Lismore, *Hayes, Turner & McGillivray* 2644, 11.1966 (97365); Lismore, *Rothwell* 12.1906 (79334); c. 10 miles [16 km] SW. of Casino, *McLean* 4.1918 (79335); Susan Is., Clarence R., *Boorman* 10.1909 (79336); Grafton District, *Flynn* 12.1953 (79337); Dorrigo, *Boorman* 12.1909 (79307); Dorrigo, *Heron* 1.1911 (79308); Dorrigo District, *Heron* 3.1910 (79309);  $\frac{1}{4}$  mile [0.8 km] from Lane's Lookout, East Dorrigo Plateau, *Melville* 3382A, 3.1953 (64805, MEL); Hastings, R., *Bekker* (MEL, lectotype; 79310); Port Macquarie, *Maiden* 11.1897 (79311); Comboyne, *Clisholm* 2.1924 (79312); Kendall, *Cleland* 2.1917 (79313; 79314); Crawford R., Bulahdelah, *Cheel* 10.1902 (79315); Crawford R., Bulahdelah, *Cheel* 10.1902 (75079); Williams R., *Fraser & Vickery* 1.1934 (79316). CENTRAL COAST: Wyong, *Boorman* 3.1900 (79317); Bulli Pass, *Betcke* 1.1893 (79318); Illawarra, *Shepherd* (MEL, syntype); Fig Tree via Wollongong, *Fishlock* 1.1930 (79319); Cambewarra near Nowra, *Monaghan* 12.1929 & 2.1932 (89515; 89514). It may be expected in the north of the South Coast subdivision. Also throughout coastal Queensland and in New Guinea.

In the specimens from New South Wales the inflorescence is typically a subumbellate raceme of triads. Reduced inflorescences have been observed only in specimens from North Queensland.

### 3. LYSIANA Tiegh.

*Inflorescence* axillary, consisting of a pedunculate or sessile 2-flowered simple umbel or reduced to a single flower; bracts single under each flower. *Corolla* 6-merous, obliquely curved, inflated in the middle, segments partly united but the corolla unequally divided with the segments on the concave side extending deeper and more strongly reflexed. *Anthers* basifix, linear, acute, 4-locular, about as long as the free part of the filament; pollen trilobate. *Style* articulate 0-1 mm above the base. *Aerial stem-parasites* without runners; leaves opposite (and sometimes clustered), flat with pinnate venation or terete.

A genus of six species, endemic in Australia. Four species are recorded for New South Wales.

1. Flowers single or in pairs without a common peduncle. Pedicel distinctly winged.  
Fruit globular ..... *L. murrayi* 1.
- 1.\* Flowers usually in pairs on a common peduncle (sometimes very short or obscure).  
Pedicel not distinctly winged. Fruit ovoid or elliptical.
  2. Leaves terete. Common peduncle very slender, usually more than 7 mm long.  
Base of style distinctly conical ..... *L. linearifolia* 2.
  - 2.\* Leaves flat or rarely somewhat compressed when very narrow. Common peduncle usually less than 3 mm long. Base of style not enlarged.
    3. Fruit elongated, more or less translucent when dry. Leaves oblanceolate to broad spatulate, with prominent venation. Calyx limb usually lobed or toothed ..... *L. subfalcata* 3.
    - 3.\* Fruit ovoid, dark. Leaves linear to oblong, with obscure venation. Calyx limb usually short, entire ..... *L. exocarpi* 4.

1. *Lysiana murrayi* (F. Muell. et Tate) Tiegh. in Bull. Soc. Bot. France 41: 603 (1894); Barlow in Proc. Linn. Soc. N.S.W. 88: 148 (1963), and in Austral. J. Bot. 14: 444 (1966).

SYNONYMY: *Loranthus murrayi* F. Muell. et Tate in Trans. Roy. Soc. S. Austral. 6: 109 (1883); Blakely in Proc. Linn. Soc. N.S.W. 50: 2, t. 1 (1925);

Black, Fl. S. Austral., ed. 2: 277 (1948); Blackall, How to Know W. Austral. Wildflowers 145 (1954); *Elytranthe murrayi* Engl., Pflanzenfam. Nachtr. 126 (1897); *Loranthus miniatus* S. Moore in J. Bot. 35: 170 (1897); *Loranthus murrayi* var. *parviflorus* S. Moore in J. Linn. Soc. 34: 225 (1899) (as "parviflora").

DISTRIBUTION: Northern part of the Far Western Plains, also in arid areas in Queensland, Northern Territory, South Australia and Western Australia. Usually parasitic on *Acacia aneura* but also found on several other *Acacia* spp., *Cassia desolata* and *Eremophila mitchellii*.

Glabrous. Leaves opposite, scattered or clustered, flat or semiterete (even the narrowest ones being more or less channelled above), linear to narrow lanceolate or oblanceolate, 2.5-6 cm x 1-3.5 mm, acute. Inflorescence consisting of a solitary axillary flower or a pair of flowers without a common peduncle; pedicels 8-20 mm long, slender at the base, much wider at the apex, strongly winged; bracts conspicuous, spreading, membranous, 2-3 mm long. Calyx cylindrical or slightly funnel-shaped; limb usually conspicuous, truncate or irregularly toothed. Corolla in the mature bud nearly straight, (10)-20-25-(32) mm long, white, yellow or pink. Style articulate almost at the base. Fruit globular, 7-12 mm long, pink or red. Chromosome number:  $2n = c. 24$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 154 (1963)). Fl. Oct.-Dec.; fr. no information.

FAR WESTERN PLAINS: Between "Urisino" and Thurloo Downs, *Boorman* 10.1912 (75073); The Gorge, W. of Milparinka, *de Beuzeville* 12.1935 (54706); *Paldrumatta* Bore, SE. of Milparinka, *Corbett* 9.1901 (54707); *Momba*, N. of Wileannia (MEL); *Rowena Tank*, 5 miles [8 km] from Mootwingee Hills, *Morris* 10.1921 (54708; BRD). Also in arid areas in Queensland, Northern Territory, South Australia and Western Australia.

2. *Lysiana linearifolia* Tiegh. in Bull. Soc. Bot. France 41: 603 (1894); Barlow in Proc. Linn. Soc. N.S.W. 88: 147 (1963), and in Austral. J. Bot. 14: 443 (1966).

SYNONYMY: *Loranthus linearifolius* Hook. in Mitchell, J. Exped. Trop. Austral. 102 (1848) nom. illegit. non Bert.; Moore & Betche, Handb. Fl. N.S.W. 228 (1893); *Loranthus mitchellianus* Blakely in Proc. Linn. Soc. N.S.W. 50: 4. t. 2 (1925); Black, Fl. S. Austral. ed. 2: 277 (1948).

NOMENCLATURAL NOTE: *Loranthus linearifolius* was taken in a wider sense by Bentham in Fl. Austral. 3: 391 (1866) and by F. M. Bailey in Queensl. Fl. 5: 1379 (1902), to include *L. casuarinae* and *L. linophyllus* (in part).

DISTRIBUTION: Northern part of the Western Plains, from Mungindi to Nyngan and west to the Darling. Also in Queensland to the headwaters of the Thompson River; usually parasitic on *Eremophila mitchellii* and *Flindersia maeulosa*.

Glabrous. Leaves linear, terete, shortly mucronate, 3-12 cm x 0.5-1.2 mm. Inflorescence a pedunculate two-flowered umbel; peduncle slender, flattened at the apex, 6-15 mm long; pedicel slender, angular, 6-20 mm long; bract small, acute, decurrent, c. 1 mm long. Calyx slightly funnel-shaped; limb bluntly 6-toothed, 0.5 mm long. Corolla in the mature bud nearly straight, 20-25 mm long. Style conical at the base, persistent on the fruit for some time, usually articulate 2-3 mm above the base. Fruit elliptical, 10-12 mm long. Chromosome number:  $n = 12$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 154 (1963)). Fl. May-June; fr. Aug.-Dec.

WESTERN PLAINS: Mungindi, *Phelps* 5.1948 (54690); 40-50 miles [64-80 km] NW. of Collarenebri, *Jackson* 12.1911 (54691; 54692; 75074); Narran R. (near Angledool), *Mitchell* (K, holotype, photo in AD; MEL); Bourke district, *Mullen* 6.1908 (54698); between "Nulty" and "Toorale", Bourke district, *Boorman* 9.1912 (54699); near "Dunlop" Station, Louth, *Etheridge* 7.1903 (54701); Byroek district, *Deane* 3.1899 (54695); "Tundulya", e. 25 miles [40 km] SE. of Louth, *Moore* 3663, 5.1966 (102134); 43 mile tank, S. of Bourke, *Cambage* 5.1900 (54697); 45 miles [72 km] S. of Bourke, *Cambage* 8.1898 (54696); Coolabah, *Peaceoek* 1901 (54694); Mt Boorandarra, NW. of Cobar, *Abrahams* 9.1910 (54700); Nyngan, *Chisholm* 6.1922 (54693). Also in Queensland to the headwaters of the Thompson River.

Although *Loranthus linearifolius* was a later homonym and therefore illegitimate, *Lysiana linearifolia* Tiegh. is legitimate as the earliest name under *Lysiana*. *L. mitchellianus* was recorded for Western Australia by Blackall in How to Know W. Austral. Wildflowers 145 (1954) but I have not seen specimens from that State.

3. *Lysiana subfalcata* (Hook.) Barlow in Proc. Linn. Soc. N.S.W. 88: 141 (1963), and in Austral. J. Bot. 14: 446 (1966).

SYNONYMY: See under the subspecies.

NOMENCLATURAL NOTE: Benth., Fl. Austral. 3: 392 (1866), included *Loranthus subfalcatus* Hook. as a synonym of *L. exocarpi* Behr ex Schlecht.

DISTRIBUTION: Widespread in northern Australia, parasitic on a wide range of host species.

Glabrous. Leaves widest at about  $\frac{2}{3}$  the length; lamina oblanceolate to broad spatulate, 2-11 x 0.4-2.0 cm, pinninerved with 2 or 4 lateral veins nearly as prominent as the midrib, acute or rounded at the apex, gradually attenuate at the base; petiole 0.5-1.0 cm long. Inflorescence a pedunculate two-flowered umbel; peduncle 1-3-(5) mm long; pedicels thinner than the peduncle, 3-8 mm long; bracts rounded or acute, 1-2 mm long. Calyx cylindrical; limb variable, mostly 6-lobed and c. 1 mm long. Corolla in the mature bud usually acute, 25-50 mm long. Style articulate 0-1 mm above the base. Fruit ellipsoidal or pear-shaped, 8-14 x 4-6 mm, usually light-coloured and somewhat translucent.

Only one of the two subspecies occurs in New South Wales:

*Loranthus subfalcata* ssp. *subfalcata*.

SYNONYMY: *Loranthus subfalcatus* Hook. in Mitchell, J. Exped. Trop. Austral. 224 (1848); *Loranthus exocarpi* var. *subfalcatus* Domin in Bibl. Bot. 89: 53 (1921); *Loranthus exocarpi* var. *venulosa* Blakely in Proc. Linn. Soc. N.S.W. 50: 9, t. 5 c (1925).

DISTRIBUTION: North Western Slopes and northern part of the Western and Far Western Plains, from Tamworth to Cobar and Tibooburra and northwards. Also in Queensland, Northern Territory, the far northeast of South Australia and the Kimberley Division of Western Australia. Usually parasitic on several species of *Acacia* but recorded from a wide range of host species.

Leaves oblanceolate or narrow-spatulate. Peduncle 1-3 mm long. Chromosome number:  $n = 12$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 154 (1963)). Fl. Apr.-Jan.; fr. June-Sept.

NORTH WESTERN SLOPES: Warialda, Rupp 8.1906 (54724); Warialda, Boorman 7.1905 (54853); Warialda, de Beuzeville 1.1914 (54854); Gunnedah, Boorman 6.1907 (54725); Gunnedah, Hclns 10.1925 (54855); Tamworth, Maiden & Boorman 6.1906 (54726); East Tamworth, McKie 7.1932 (54856; 54857). WESTERN PLAINS: 40-50 miles [64-80 km] NW. of Collarenebri, Jackson 12.1911 (54767); Lightning Ridge, Constable 5.1951 (19234); Brewarrina, MacMaster 3.1910 (54770); "Wilgaroon", S. of Bourke, Cambage 5.1900 (54773); Mt Oxley, c. 22 miles [35 km] ESE. of Bourke, Ingram 7.1958 (54771; 54772); West Bogan, Bauerlen 2.1900 (75070); Narrabri, Boorman 6.1907 (54769); Narrabri, Burrow 1.1916 (54858); "Tundulya", c. 25 miles [40 km] SE. of Louth, Moore 3669, 5.1966 (101577); 22 miles [35 km] W. of Quambone, Chippendale & Constable 5.1951 (19222); Coonamble, Procter 1.1920 (54774); Coolabah, Peacock 1900 (54775); Cobar, Abrahams 5.1910 & 9.1911 (54779; 54778); Cobar, Boorman 5.1918 (54790, type of *Loranthus exocarpi* var. *venulosa* Blakely); Cobar, Hadley 9.1932 (75071);  $\frac{1}{2}$  mile [1.2 km] W. of Boppy Mountain, Briggs 2694, 5.1969 (88093); Nyngan, Rogers 9.1905 (54879); Nyngan, Chisholm 6.1922 (54777); Warren-Coonamble road, Deane 6.1896 (54776); "Mt Harris" Station, Warren, Constable 4.1952 (20413). FAR WESTERN PLAINS: Tibooburra, Couch 1.1913 (54727). Also in Queensland, Northern Territory, the far northeast of South Australia and the Kimberley Division of Western Australia.

4. *Lysiana exocarpi* (Behr ex Schlecht.) Tiegh. in Bull. Soc. Bot. France 41: 603 (1894); Barlow in Proc. Linn. Soc. N.S.W. 88: 144 (1963), and in Austral. J. Bot. 14: 442 (1966).

SYNONYMY: See under the subspecies.

NOMENCLATURAL NOTE: Benth., Fl. Austral. 3: 392 (1866), included *Loranthus subfalcatus* Hook. as a synonym of *L. exocarpi* Behr ex Schlecht.

DISTRIBUTION: Widespread in temperate Australia on a wide range of hosts.

Glabrous. Leaves narrow linear to oblong, 3–15 x 0·1–1·0 cm, often falcate, flat or somewhat compressed when very narrow, wrinkled when dry, the broader ones widest in the middle and abruptly contracted into an obscure petiole; venation obscure. Inflorescence a two- (or three-) flowered umbel; peduncle 0·5–1·5–(3) mm long; pedicel 2–5 mm long; bract rounded, 1–1·5 mm long. Calyx cylindrical; limb 0·3–0·7 mm long, spreading, entire or irregularly lobed. Corolla in the mature bud usually obtuse, 25–50 mm long. Style usually articulate at the base. Fruit elliptical to ovoid, truncate, red or black, 6–10 mm long.

Three more or less intergrading subspecies may be recognized:

1. Mature leaves narrow linear to lanceolate, often falcate, attenuate at the base.
2. Leaves lanceolate, 0·3–1·0 cm wide ..... ssp. *exocarpi* a.
- 2.\* Leaves linear, 0·1–0·3 cm wide ..... ssp. *tenuis* b.
- 1.\* Mature leaves lanceolate to oblong, thick, abruptly contracted at the base ..... ssp. *diamantinensis* c.

a. *Loranthus exocarpi* ssp. *exocarpi*.

SYNONYMY: *Loranthus exocarpi* Behr ex Schlecht. in Linnaea 20: 624 (1847); Benth., Fl. Austral. 3: 392 (1866); Moore & Betche, Handb. Fl. N.S.W. 228 (1893); F. M. Bail., Queensl. Fl. 5: 1379 (1902); Ewart, Fl. Vict. 427 (1931); Black, Fl. S. Austral. ed. 2: 277 (1948); Blackall, How to Know W. Austral. Wildflowers 145 (1954); *Loranthus angustifolius* R. Br. ex Benth., Fl. Austral. 3: 390 (1866); *Dendrophthoe angustifolia* (R. Br. ex Benth.) Tiegh. in Bull. Soc. Bot. France 42: 83 (1895); *Elytranthe exocarpi* (Behr ex Schlecht.) Engl., Pflanzenfam. Nachtr. 126 (1897).

DISTRIBUTION: Southern part of the Western Plains and also in Victoria and the southeast of South Australia. Parasitic on a wide range of host species.

Leaves lanceolate, usually falcate, not thick. Fl. Jan.; fr. Jan.

WESTERN PLAINS: "Zara", Wangaratta, Officer 1.1922 (54750–54758). Also in Victoria and the southeast of South Australia.

b. *Loranthus exocarpi* ssp. *tenuis* (Blakely) Barlow in Proc. Linn. Soc. N.S.W. 88: 145 (1963) and in Austral. J. Bot. 14: 443 (1966).

SYNONYMY: *Loranthus exocarpi* var. *tenuis* Blakely in Proc. Linn. Soc. N.S.W. 50: 8, t. 5a (1925).

DISTRIBUTION: Extreme south of the North Coast (Hunter River district), North and Central Western Slopes and Western Plains. Also in Queensland (to the northern Darling Downs) and in Victoria. Usually parasitic on *Casuarina* spp. (*C. cristata*, *C. luehmannii*, *C. glauca*); occasionally found on *Acacia oswaldii* and other hosts.

Leaves linear, often slightly falcate, somewhat compressed when very narrow but not terete. Chromosome number:  $n = 12$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 154 (1963)). Fl. Most of year; fr. Feb.-June.

NORTH COAST: Glendon near Singleton, *Leichhardt* (54787); Nelson Bay, *Lithgaw* 3.1965 (74305); Belmont, *Dwyer* 2.1920 (54723, 54788). CENTRAL COAST: Dora Creek, *Caveny*, 3.1966 (96431). NORTH WESTERN SLOPES: Boggabri, *Jenseu* 8.1911 (54798); Teridgerie Creek, Teridgerie, *Constable* 3.1951 (16482). CENTRAL WESTERN SLOPES: Biddon State Forest, Gilgandra, *Constable* 4.1952 (20346); Gungal, *Baorman* 12.1904 (54785); Baerami, *Cambage* 2654, 5.1911 (54786); e. 2 miles [3.2 km] W. of Jerrys Plains, *Story* 7116, 3.1960 (54722). WESTERN PLAINS: Mungindi, *Phelps* 4.1907 (54792); Mungindi, *Cambage* 4360, 9.1922 (54768); 40-50 miles [64-80 km] NW. of Collarenebri, *Jackson* 12.1911 (54794); Enngonia, N. of Bourke, *Sally* 9.1893 (54793); West Bogan, *Bauerlen* 4.1900 (54801, 54802); Narrabri, *Bauerlen* 6.1901 (54795); near Narrabri, *Burrows* 1.1918 (54796, lectotype of *Loranthus exocarpi* var. *tenuis* Blakely); Pilliga, *Boorman* 8.1907 (54797); Pilliga, *Rupp* 9.1932 (54747); Byrock, *Deane* 3.1899 (54799); "Meranda" Station, 80 miles [128 km] N. of Warren, *Constable* 5.1952 (20388); Coolabah, *Peacock* 1900 (54800); 11 miles [18 km] E. of Ivanhoe, *Whaite* 1390, 4.1953 (54780). Also in Queensland (to the northern Darling Downs) and in Victoria.

c. *Loranthus exocarpi* ssp. *diamantinensis* (Black) Barlow in Proc. Linn. Soc. N.S.W. 88: 145 (1963) and in Austral. J. Bot. 14: 443 (1966).

SYNONYMY: *Loranthus diamantinensis* Black in Trans. Roy. Soc. S. Austral. 69: 309 (1945); Fl. S. Austral. ed. 2: 278 (1948).

DISTRIBUTION: Far Western Plains, also in arid areas of Queensland, Northern Territory, South Australia and Western Australia (to be expected in far NW. Victoria). Usually parasitic on several species of *Acaea* but recorded from several other host species.

*Juvenile and young leaves* lanceolate, thin. *Mature adult leaves* lanceolate to oblong, thick and finely wrinkled, widest in the middle, abruptly contracted at the base. *Chromosome number*:  $2n = 24$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 154 (1963)). Fl. Apr.; fr. May-Oct.

FAR WESTERN PLAINS: Between Thurloo and Berawinia Downs, *Boorman* 10.1912 (54729); Milparinka, *Irez* 8.1906 (54728); "Winnathee", 60 miles [96 km] W. of Milparinka, *Johnson* & *Constable* 6.1955 (39807); Lake Cawndilla, 10 miles [16 km] SW. of Menindee, *Constable* 7.1955 (39923); 3 miles [4.8 km] W. of Cal Lal, *Jahnsan* & *Constable* 3.1959 (48439); Also in arid areas of Queensland, Northern Territory, South Australia and Western Australia, (to be expected in far NW. Victoria).

There are distinct clines connecting *L. exocarpi* ssp. *exocarpi* with each of the other two subspecies (see Barlow in Proc. Linn. Soc. N.S.W. 88: 145 (1963) and in Austral. J. Bot. 14: 443 (1966)). The following specimens in Herb. NSW are intermediate between spp. *exocarpi* and *tenuis*:

SOUTH WESTERN SLOPES: Narrandera, *Jahson* 547/1, 5.1947 (6054). WESTERN PLAINS: "Berida", near Bourke, *Henderson* 66/5, 5.1966 (82051); Coolabah, *Maiden* 3.1904 (75069); "Rocky Glen", c. 40 miles [64 km] SE. of Louth, *Maare* 3692, 5.1966 (101576); between "Clare" and "Kilfera", S. of Ivanhoe, *Jahson* 5.1955 (54781); Griffith, *Dwyer* 5.1922 (54804); Griffith, *Blakely* & *Shires* 7.1928 (54803); 34 miles [54 km] N. of Deniliquin, *Leigh* S407, 1.1966 (90168); "Zara", Wanganella, *Officer* 8.1903 & 5.1917 (54782; 54805).

The following specimens in Herb. NSW are intermediate between spp. *exocarpi* and *diamantinensis*:

WESTERN PLAINS: Hillston, *Johnson* 547/34, 5.1947 (5067). FAR WESTERN PLAINS: 39 miles [62 km] NW. of Wilcannia on road to White Cliffs, *De Nardi* 256, 5.1969 (88086); Tarrawingee, N. of Broken Hill, *Leinard* 3.1899 (54826); Umberumberka dam, N. of Silverton, *Jahnsan* 8.1946 (54730); Broken Hill, *Morris* 7.1918 & 2.1920 & 5.1920 (54732; 54736; 54735); Broken Hill, *Dwyer* 6.1924 (54734); Broken Hill, *Cheel* 8.1926 (54733); Broken Hill district, *le Rassignol* (89519); Pine Creek, near Broken Hill, *Morris* 5.1920 (54731); Balaklava Swamp, 45 miles [72 km] E. of Broken Hill, *Cleland* 4.1917 (54737); "Byrnedale" Station, 27 miles [43 km] NW. of Menindee, *Leigh* W276, 8.1968 (112232); Wentworth, *Dept. Agr. Biol. Branch* 8.1940 (54806).

## 4. MUELLERINA Tiegh.

*Inflorescence* terminal (often on a short lateral stem and then seemingly axillary), consisting of a raceme of 1-6 decussate pairs of pedunculate dichasias (triads) or single flowers, each triad with the central flower sessile and the lateral flowers pedicellate; bracts single under each flower. *Corolla* 5-merous, with free petals, curved in bud. *Stamens* unequal; anthers oblong, 2-locular at maturity, dorsifixed, versatile; pollen triangular. *Style* articulate at the base. *Fruit* pear-shaped. *Aerial stem-parasitic shrubs* with runners; leaves opposite, curvinerved or pinninerved.

A genus of four species in eastern Australia.

1. Flowers single, mostly forming a simple 2-flowered umbel.
2. Leaves linear ..... *M. bidwillii* 1.
- 2.\* Leaves ovate, sessile ..... *M. myrtifolia* 2.
- 1.\* Flowers in triads or if single then forming a raceme of at least three pairs of flowers.
3. Stems pendulous. Leaves linear to oblong, acute, mostly more than 8 cm long. Usual host *Eucalyptus* ..... *M. eucalyptoides* 3.
- 3.\* Stems spreading. Leaves oblong to orbicular, rounded, mostly less than 8 cm long. Usual host not *Eucalyptus* ..... *M. celastroides* 4.

1. *Muellerina bidwillii* (Benth.) Barlow in Proc. Linn. Soc. N.S.W. 87: 53 (1962), and in Austral. J. Bot. 14: 450 (1966).

**SYNONYMY:** *Loranthus bidwillii* Benth., Fl. Austral. 3: 390 (1866); F. M. Bail., Queensl. Fl. 5: 1378, t. 62 (1902); *Phrygilanthus bidwillii* (Benth.) Eichl. in Mart., Fl. Bras. 5: 48 (1868); Blakely in Proc. Linn. Soc. N.S.W. 47: 220, t. 32 (1922); *Furcilla bidwillii* (Benth.) Tiegh. in Bull. Soc. Bot. France 47: 85 (1895).

**DISTRIBUTION:** Drier parts of the Tablelands, Western Slopes, and eastern edge of Western Plains. Also in Queensland (to Fraser Island), almost exclusively parasitic on *Callitris* spp.

Glabrous or with a few, short, scattered hairs on the inflorescence and fruit. *Leaf-lamina* linear to oblanceolate, 1.5-2.5-(3.5) cm x 1.5-2.5-(4) mm, rounded at the apex, attenuate at the base; petiole obscure, c. 2 mm long. *Inflorescence* a simple two-flowered umbel or rarely produced into a four-flowered simple raceme; peduncle very slender, 3-6 mm long; pedicels slender, wider and angular at the apex, 5-7 mm long; bracts spreading, keeled, 1-1.5 mm long. *Calyx* cylindrical or slightly barrel-shaped; limb entire, 0.5 mm long. *Corolla* in the mature bud slender, acute, 20-27 mm long. *Antlers* 1-1.5 mm long; free part of the filament 8-10 mm long. *Fruit* 6-8 mm long. *Chromosome number:*  $n = 11$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 154 (1963)). Fl. Aug.-Apr.; fr. Aug.

**SOUTHERN TABLELANDS:** Ridge above Murrumbidgee R. near Cotter Junction, McKee 9672, 11.1962 (63161). **NORTH WESTERN SLOPES:** New England, *Stuart* (80456); Moonbi Range, Blakely 4.1927 (80450); Upper Moore Creek, Tamworth, *Rupp* 12.1903 (80449); Tamworth, *Carne* 8.1912 (80448); Warrumbungle Ranges, *Forsyth* 10.1899 (80453); Forked Mtn., 6 miles [10 km] E. of Coonabarabran, *Jeusen* 8.1911 (80452); Coonabarabran, *Meek* 8.1919 (80451); Mt Duri, Currabubula, *Cambage* 8.1912 (80447). **CENTRAL WESTERN SLOPES:** Gilgandra, *Lithgow* 11.1963 (69285) in part; Owens Gap, W. of Scone, *White* 12.1918 (80446); Worondi Rivulet between Gungai and Mt Dangar, *Johnson* 4.1953 (23525); Nepheline Mtn., c. 12 miles [19 km] SSE. of Wollar, *Story* 7580 (58307); 23 mile [37 km] peg on Mudgee-Wollar road, near Cumbo Creek, *Johnson & Constable* 8.1950 (14527); Murrumbo, 5 miles [8 km] N. of Rylstone, *Baker* 10.1893 (75076); 4 miles [6.4 km] N. of Olinda, *Johnson* 9.1951 (80445); Bowan Park near Cudal, *Blakely* 10.1906 & 11.1907 (80443; 80444). **SOUTH WESTERN SLOPES:**

Burrinjuck, *Cheel* 1.1912 (80441; 80442). WESTERN PLAINS: Pilliga, *Rupp* 11.1932 & 12.1932 (80455; 75072); Pilliga Scrub, *de Beuzeville* 12.1915 (80454). Also in Queensland (to Fraser Island).

2. *Muellerina myrtifolia* (*A. Cunn. ex Benth.*) *Barlow* in Proc. Linn. Soc. N.S.W. 87: 55 (1962) and in Austral. J. Bot. 14: 452 (1966).

SYNONYMY: *Loranthus myrtifolius* A. Cunn. ex Benth., Fl. Austral. 3: 390 (1866); Moore & Betché, Handb. Fl. N.S.W. 228 (1893); F. M. Bail., Queensl. Fl. 5: 1378, t. 63 (1902); *Phrygilanthus myrtifolius* (*A. Cunn. ex Benth.*) Eichl. in Mart., Fl. Bras. 5: 48 (1868); Blakely in Proc. Linn. Soc. N.S.W. 47: 219, t. 31 (1922); *Furcilla myrtifolia* (*A. Cunn. ex Benth.*) Tiegh. in Bull. Soc. Bot. France 42: 87 (1895).

DISTRIBUTION: MacPherson Range (Far North Coast Ranges) in rainforest, also in neighbouring areas of Queensland, northwards to Gladfield. Parasitic on several dicotyledonous host species.

Glabrous. *Leaf-lamina* elliptical, 1.5-2.5 x 0.8-1.2 cm, obtuse at the apex, cordate and sessile at the base, widest below the middle. *Inflorescence* a two-flowered simple umbel; peduncle slender, 5-7-(10) mm long; pedicels slender, wider and angular towards the apex, 6-10 mm long; bracts erect, keeled, 1 mm long. *Calyx* barrel-shaped; limb entire, 0.5 mm long. *Corolla* in the mature bud slender, acute, 20-25 mm long. *Anthers* 1-1.5 mm long; free part of the filament 8-11 mm long. Fl. Jan.-Feb.; fr. no information.

NORTH COAST: Acacia Creek, *Dunn* 1.1906 & 2.1906 (75075; 80440). Also in neighbouring areas of Queensland, to Gladfield.

3. *Muellerina eucalyptoides* (*DC.*) *Barlow* in Proc. Linn. Soc. N.S.W. 87: 55 (1962) and in Austral. J. Bot. 14: 451 (1966).

SYNONYMY: *Loranthus eucalyptifolius* Sieber ex Schult. & Schult. f., Syst. Veg. 7: 163 (1829), nom. illegit., non H.B.K. (1820); *Loranthus eucalyptoides* DC., Prod. 4: 318 (1830); *Phrygilanthus eucalyptifolius* (Sieber ex Schult. & Schult. f.) Eichl. in Mart., Fl. Bras. 5: 48 (1868), nom. illegit.; Blakely in Proc. Linn. Soc. N.S.W. 47: 208, t. 29 (1922); Ewart, Fl. Vict. 427 (1931); *Deudorix eucalyptoides* (DC.) Ettingsh., Denks. Akad. Wiss. Math.-Natur. 32: 67 (1871); *Muellerina eucalyptifolia* (Sieber ex Schult. & Schult. f.) Tiegh. in Bull. Soc. Bot. France 42: 25 (1895), nom. illegit.; Beadle, Evans & Carolin, Handb. Vasc. Pl. Syd. Dist. & Blue Mts 311 (1963); *Phrygilanthus eucalyptoides* (DC.) Danser in Bull. Jard. Bot. Buitenz. 10: 348 (1929).

NOMENCLATURAL NOTE: This species was included in *Loranthus celastroides* by Benth., Fl. Austral. 3: 389 (1866); Moore & Betché, Handb. Fl. N.S.W. 227 (1893); F. M. Bail., Queensl. Fl. 5: 1377 (1902), and in *Phrygilanthus celastroides* by Black, Fl. S. Austral. ed. 2: 279 (1948).

DISTRIBUTION: Coast and less commonly on the Tablelands and North and Central Western Slopes. Also in Queensland (northwards to Kingaroy), and southwards and westwards through Victoria to the extreme southeast of South Australia. Common on many species of *Eucalyptus*, but also recorded from a large number of occasional hosts including many introduced plants.

Glabrous. *Leaf-lamina* linear-lanceolate to nearly oblong, (6)-9-15-(25) x 0.7-1.5-(2.5) cm, attenuate and usually acute at the apex, very gradually attenuate at the base; petiole slender, 1-2-(3) cm long. *Inflorescence axis* 1.2-2-(3.5) cm long, enlarged at the nodes; peduncles in (2)-4-5 pairs, 5-9 mm long, usually bearing triads of flowers but often bearing single flowers (especially in northern populations);

pedieels of the lateral flowers of the triads (when present) slender, 4-6 mm long; bracts acute, keeled, 1 mm long. *Calyx* barrel-shaped; limb 0.7 mm long. *Corolla* in the mature bud slender, weakly elevata, acute, 30-45 mm long. *Anthers* 2-2.5 mm long; free part of the filament 8-12 mm long. *Fruit* 12-15 mm long, truncate and 5 mm wide at the apex. *Chromosomal number*:  $n = 11$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 154 (1963)). Fl. Dec.-Mar.; fr. Apr.-Oct.

NORTH COAST: 10 miles [16 km] E. of Legume on Urbenville road, *Barlow* 671, 10.1963 (BRIU); vicinity of Maryland, *Gray* 1.1956 (80125); Kendall fire hut, 4.5 miles [7.2 km] W. of Kendall, *Whaite* 519, 1.1950 (84135); Taree, *Cheel* 5.1925 (80255); Mt Wambo, 5 miles [8 km] NW. of Bulga, *Constable* 8.1957 (80256); Belmont, *Dwyer* 2.1920 (36522). CENTRAL COAST: Mt Wareng, 2 miles [3.2 km] E. of Howes Valley, *Constable* 5973, 6.1965 (80257); Gosford, *de Beuzeville* 3.1918 (80258); 5 miles [8 km] S. of Wisemans Ferry, *Barlow* 216, 12.1960 (BRIU 31); 6 miles [10 km] S. of Wisemans Ferry, *Barlow* 218, 12.1960 (BRIU 33); Hawkesbury R., *Blakely & Shiress* 1.1918 (80260-80264; 75077); Richmond, *Southee* 2.1947 (80285); Cowan [Railway] Station, *Blakely & Shiress* 1.1918 (80265); Cowan Creek, Cowan, *Blakely & Shiress* 3.1918 (80267; 80268; 80269); Cowan Creek, near Windybanks, *Blakely, Shiress & Bott* 3.1918 (80266); Berowra, *Fletcher* 1.1889 (80270); Berowra near [Railway] Station, *Blakely* 3.1918 (80271); Berowra Creek, *Blakely* 3.1918 (80275; 80276; 80277); Berowra Creek near punt, *Blakely* 3.1918 (80272; 80273); Berowra Creek 1/2 mile [0.8 km] up from punt, *Blakely* 3.1918 (80278); Kuring-gai [Railway] Station, *Shiress* 8.1918 (80279); Bobbin Head, *Blakely* 1.1918 (80280); Gibbertygong Creek on Kuring-gai Chase boundary line, *Blakely* 7.1918 (80281); Mt Colah, *Blakely* 5.1917 (36521); Mt Colah, *Blakely, Shiress & Bott* 7.1917 (80282); 1 1/2 miles [2.4 km] post, Kuring-gai Chase Road, *Blakely, Shiress & Bott* 7.1917 (80283); Galston Valley, *Blakely & Shiress* 5.1919 (80191); Trig Hill off Galston Road, 17-mile [27 km] post, 3 miles [4.8 km] N. of Hornsby, *Blakely* 6.1917 (80199); Berowra Creek, 2 miles [3.2 km] N. of Hornsby, *Blakely & Shiress* 4.1920 (80189); Asquith, *Blakely* 4.1917 & 4.1917 & 5.1917 & 1.1918 & 1.1918 & 1.1918 & 2.1918 (80198; 80195; 36510; 80197; 80196; 80193; 80192; 80194); on track to Gibbertygong Creek, Hornsby, *Blakely* 10.1917 (80188); Crosslands track, 19 mile [30 km] post, Hornsby, *Blakely* 1.1918 (80200; 80201); Hornsby, *Blakely* 2.1914 & 4.1917 & 4.1917 & 4.1917 & 6.1917 & 6.1917 & 10.1917 & 12.1917 & 8.1918 & 1.1920 & 6.1928 (36508; 36509; 36507; 80182; 80187; 80183; 80186; 80181; 36506; 80184; 80190; 80185); Waitara, *Blakely* 12.1916 & 5.1917 & 5.1917 & 5.1917 & 8.1917 & 12.1917 & 12.1917 & 8.1918 (80161; 80165; 80168; 36524; 36523; 80164; 80163; 80162; 80166); between Hornsby and Wahroonga, *Blakely* (80160); Pennant Hills Road, Wahroonga, *Blakely* 1.1920 (80180; 80179); Wahroonga, *Blakely* 8.1918 (80177; 80178); Wahroonga, *Salasoo* 12.1951 (80176); between Hornsby and Normanhurst, *Blakely* 2.1918 (80159); between Wahroonga and Warrawee, *Blakely* 6.1917 (80175); Warrawee, *Blakely* 5.1917 & 5.1917 & 12.1917 & 12.1917 & 8.1918 (80171; 80173; 80174; 80170; 80169; 80172); Dec Why, *Boorman* 4.1922 (80311); St Ives, *Blakely, Shiress & Bott* 4.1918 (80329; 80330; 80331); Normanhurst, *Blakely & Shiress* 2.1918 (80145; 80151; 80152; 80154; 80155; 80156; 80157; 80158); Normanhurst, *Blakely* 8.1918 & 10.1918 (80146; 80153); Pennant Hills Road, Normanhurst, *Blakely* 8.1918 (80147; 80148; 80149; 80150); Turrarmurra, *Blakely* 6.1917 (80332; 80333; 80334; 80335); Pymble, *Blakely* 1.1918 (80322; 80323; 80324; 80325; 80326; 80327; 80328); Gordon (near [Railway] Station), *Blakely* 4.1918 (80320; 80321); Manly, *Fletcher* 1.1889 (80306); Killara, *Blakely* 5.1917 (36525; 80319); Pennant Hills, *Steel* 1.1915 & 10.1920 (80301; 80303); Pennant Hills Railway Station, *Steel* 1.1918 (80302); Lindfield, *Blakely* 5.1917 (80314; 80315; 80316; 80317; 80318); Lindfield (near [Railway] Station), *Blakely* 5.1917 (80313); Cheltenham, *Johnson* 322, 10.1945 (80299); Devlins Creek West, Cheltenham, *Johnson* 5.1945 (80300); The Spit, *Blakely & Boorman* 8.1918 (80307; 80308; 80309; 80310); Willoughby, *Shiress & Bott* 9.1917 (80312); Meadowbank, *Blakely* 12.1917 (80292; 80293; 80294; 80295; 80296; 80297; 80298); Ermington Park, *Blakely & Shiress* 6.1919 (80289; 80290); Ermington, *Blakely & Shiress* 6.1919 (80291); Glenbrook, *Boorman* 10.1920 (80284); Blacktown, *Lalor* 1.1916 (80286); Parramatta Road, Parramatta, *Blakely & Shiress* 6.1919 (80287; 80288); Botanic Gardens, Sydney, *Blakely* 10.1917 & 8.1918 & 6.1919 & 5.1920 (80218; 80219; 80217; 80221); Botanic Gardens, Sydney, *Camfield* 1.1896 (80212); Botanic Gardens, Sydney, *Mitchell* 8.1918 (80220); Nielsen Park, Vaucluse, *Blakely* 2.1918 (80223; 80224); Homebush Road, Homebush, *Cheel* 12.1915 (80231); Fairfield, *Blakely, Shiress & Bott* 6.1918 (80228; 80229; 80230); Georges R., Fairfield, *Blakely, Shiress & Bott* 6.1918 (80227); Canley Vale, *Blakely, Shiress & Bott* 6.1918 (80225; 80226); banks of Georges R. near Cabramatta, *Blakely, Shiress & Bott* 6.1918 (80233); between Cabramatta and Georges R., *Blakely, Shiress & Bott* 6.1918 (80232; 80234; 80235; 80236; 80237); Hurstville, *Camfield* 1.1896 & 2.1903 & 2.1903 (36520; 80204; 80205); near Hurstville, *Blakely* 3.1918 (80206); Carr's Paddock, Carlton, *Blakely* 3.1918 (80207; 80208; 80209; 80210); Tom Uglys Point road, *Camfield* 1.1903 (80203); Como, *Betehe* 5.1895 (80202); Botany Bay, *Camfield* 12.1894 (80211); between Appin and Campbelltown, *Ford* 2.1949 (7228); Oakdale, *Johnson* 9.1951 (80239); Picton, *Chisholm* 11.1918 (80240); Joorilands, Wollondilly R., 8 miles

[13 km] SE. of Yerranderie, *Constable* 5646 1.1965 (75371); foot of Macquarie Pass, Albion Park, *McBarran* 12319, 4.1966 (91045); Saddleback Mtn., Kiama, *Constable* 1.1955 (30752); Kangaroo Valley, *Radway* 11.1923 (89516); between Berry and Seven Mile Beach, *Salasao* 1146, 3.1954 (80246). SOUTH COAST: Nowra, *Monaghan* 3.1924 (80245); Burrier, Shoalhaven R., *Rodway* 11.1927 (89517); Yalwal road, W. of Nowra, *Rodway* 1.1924 (80244); Bermagui, *Dunn* 7.1917 & 11.1917 (80243; 80242). NORTHERN TABLELANDS: Guyra, *McKie* 1928 (80126); top of Big Hill towards Moredun Creek, *Blakely*, *McKie* & *Bavman* 11.1929 (80127); Uralla, *McKie* 10.1930 (80128); Mt Royal, 25 miles [40 km] E. of Aberdeen, *Stary* 7184, 3.1960 (80139). CENTRAL TABLELANDS: El Dorado on Orange-Ophir road, *Giles* 9.1959 (80129); Orange, *Dwyer* 9.1923 (80130); Mt Wilson, *Gregson* 1.1899 (80131); Jenolan Caves, *Blakely* 6.1900 (80132); Bluebush Range, Kowmung R., *Jahnsau* 348/112, 3.1948 (5082); between Wollondilly R. and Wombeyan Caves, *Cheel* & *Cleland* 12.1919 (80133); c. 1 mile [1.6 km] W. of Hilltop, *McGillivray* 1548, 12.1965 (83979); Hilltop, *Cheel* 7.1917 (36502). SOUTHERN TABLELANDS: Nerriga, *Baarmen* 1.1915 (80134); Canberra, *Gray* 5399, 1.1964 (78654). NORTH WESTERN SLOPES: Moonbi Range, *Blakely* 4.1927 (80135); 20 miles [32 km] N. of Tamworth, *Barlaw* 221, 1.1961 (BRIU 32); between Timor Rock and Mobera Rock, Warrumbungle Ranges, *Salasao* 2287, 1.1962 (80137); Coonabarabran, *Jensen* 10.1906 (80136). CENTRAL WESTERN SLOPES: Scone, *Jackson* 10.1924 (80138); Coxs Gap, Kerrabee, *Johnson* 4.1953 (80140); Waterworks Reservoir, Mudgee, *Helms* 3.1922 (80141); Dividing Range, N. of Rylstone, *McKee* 4.1953 (80142); Rylstone-Lue road, *Constable* 6.1950 (11850); Peak Hill district, *Turner* 7.1934 (80143); Moura near Bumberry, *Bauerlen* 3.1901 (80144); Bushy Hill, c. 1 mile [1.6 km] NW. of Grenfell, *Salasao* 12.1964 (73762); Temora, *Dwyer* 5.1917 (36501). Also in Queensland (northwards to Kingaroy), and southwards and westwards through Victoria to the extreme southeast of South Australia.

*M. eucalyptoides* and *M. celastroides* both appear to be rather variable, and intergrade to a small degree. The intermediate specimens enumerated below are probably the products of interspecific hybridization, and some of the extreme variants enumerated under *M. eucalyptoides* and *M. celastroides* may be introgressive forms. Both mistletoes are commonly found together, and sometimes show double parasitism. Intermediate plants have been recorded mostly from introduced hosts, and it is considered likely that *M. eucalyptoides* and *M. celastroides* have attained a high degree of reproductive isolation after specialization for myrtaceous and non-myrtaceous hosts respectively.

NORTH COAST: Big Hill, 26 miles [42 km] E. of Glen Innes on *Casuarina torulosa*, *McKie* 10.1929 (80373). CENTRAL COAST: Hawkesbury R. on *Angophora costata*, *Blakely* & *Shires* 1.1918 (80259); Berowra Creek, Berowra, on *Casuarina littoralis*, *Blakely* 3.1918 (80274); Waitara on *Acacia* aff. *mollissima* "from same as the narrow form", *Blakely* 12.1917 (80167); Pennant Hills Road, Normanhurst, on *Prunus persica*, *Blakely* 8.1918 & 1.1920 (80346; 36531); Pennant Hills Railway Station on *Schinus molle*, *Steel* 1.1918 (80305); Pennant Hills on *Schinus molle*, *Blakely* 12.1917 (80304); Botanic Gardens, Sydney, on *Quercus bicolar* & *Q. alba* & *Juglans cinerea* & *Quercus lusitanica*, *Blakely* 6.1917 & 10.1917 & 12.1917 & 7.1919 (80214; 80213; 80215; 80216); Mrs Macquarie's Chair, Sydney, on *Eucalyptus resinifera*, *Camfield* 9.1902 (80222); between Cabramatta and Georges R. on *Eucalyptus langifolia*, *Blakely*, *Shires* & *Bott* 6.1918 (80238); Mt Kembla on *Prunus persica*, *Hamilton* (80247).

**4. Muellerina celastroides (Sieber ex Schult. & Schult. f.) Tiegh.** in Bull. Soc. Bot. France 42: 25 (1895); Beadle, Evans & Carolin, Handb. Vasc. Pl. Syd. Dist. & Blue Mts 311 (1963); Barlow in Austral. J. Bot. 14: 450 (1966).

SYNONYMY: *Loranthus celastroides* Sieber ex Schult. & Schult. f., Syst. Veg. 7: 163 (1829); Benth., Fl. Austral. 3: 389 (1866); Moore & Beteche, Handb. Fl. N.S.W. 227 (1893); F. M. Bail., Queensl. Fl. 5: 1377 (1902); *Dendrophthoe celastroides* (Sieber ex Schult. & Schult. f.) Mart., Flora 13: 110 (1830); *Loranthus tenuiflorus* Hook. f., Fl. N.Z. 1: 100 (1853); *Phrygilanthus celastroides* (Sieber ex Schult. & Schult. f.) Eichl. in Mart., Fl. Bras. 5: 48 (1868); *Blakely* in Proc. Linn. Soc. N.S.W. 47: 215, t. 30 (1922); Ewart, Fl. Viet. 427 (1930); Black, Fl. S. Austral. ed. 2: 279 (1948); *Loranthus raoulii*, *Muellerina raoulii* (Tiegh.) Tiegh. and *Hookerella tenuiflora* (Hook. f.) Tiegh. in Bull. Soc. Bot. France 42: 25, 26 (1895); *Phrygilanthus tenuiflorus* (Hook. f.) Engl. and *Phrygilanthus raoulii* (Tiegh.) Engl., Pflanzenfam. Nachtr. 134 (1897); Allan, Fl. N.Z. 1: 416 (1961).

NOMENCLATURAL NOTE: See under *M. eucalyptoides*.

DISTRIBUTION: Coast, mostly at low altitudes but extending to the ranges in the north. Also in Queensland (northwards to Noosa), and in eastern Victoria (to the Gippsland Lakes). Doubtfully present in North Island, New Zealand (cf. Barlow in Austral. J. Bot. 14: 451 (1966)). Parasitic on a variety of trees but most commonly recorded on *Banksia* spp. and *Casuarina* spp.

Glabrous except for the inflorescence minutely brown-tomentose. *Leaf-lamina* oblong to elliptical, 2.5-7 x 1.5-2.5 cm, rounded or obtuse at the apex, gradually attenuate at the base, undulate when dry; petiole obscure, more or less winged, 3-8 mm long. *Inflorescence axis* slender, 0.5-2 cm long; peduncles in 1-3 pairs, 5-7 mm long; flowers in triads with the lateral flowers on pedicels 3-6 mm long, bracts narrow, acute, ciliate, 1.5-2 mm long. *Calyx* barrel-shaped; limb entire, 0.7-1 mm long. *Corolla* in the mature bud slender, weakly clavate, acute, 22-35 mm long. *Anthers* dorsifixed just above the middle, c. 1.5 mm long. *Chromosome number*:  $n = 11$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 154 (1963)). Fl. Nov.-Feb.; fr. Apr.-Aug.

NORTH COAST: Fingal, *Barlow* 194 & 196 & 668, 12.1960 & 12.1960 & 10.1963 (BRIU 39; BRIU 42; BRIU); between Koreelah and Legume, *Barlow* 673, 10.1963 (BRIU); Lower Cudgera, Burringbar, *Harrison* 11.1929 (80370); Mullumbimby, *Bauerlen* 5.1895 (80371); Evans R., *Betche* 12.1894 (80372); Dorrigo, *Hervit* 10.1910 (80374); Maealey R. at Crescent Head, *Sydenham* 12.1917 (80375); Hastings R., *Brown* 2.1896 (36534); The Comboyne, *Chisholm* 1.1924 (80376); Smith's Lake, N. of Bulahdelah, *Rupp* 1.1924 (80377); Belmont, *Dwyer* 3.1920 (80378). CENTRAL COAST: Martinsville, *Constable* 8.1949 (11531); Boat Harbour, Tuggerah Lakes, *Darnell-Smith* 2.1925 (36533); Terrigal, *Roberts* 5.1954 (80379); Hawkesbury R., *Blakely* & *Shireess* 1.1918 (80347); Cowan Creek, *Blakely* & *Shireess* 3.1918 (80348); Cowan Creek near Windybanks, *Blakely*, *Shireess* & *Bott* 3.1918 (80349); Berowra Creek below punt, *Blakely* 3.1918 (80350); Berowra Creek above punt, *Blakely* 3.1918 (80351); Kuring-gai Chase near baths, *Blakely* 5.1917 & 1.1918 (80352; 89353); Bobbin Head, Kuring-gai Chase, *Blakely* 1.1918 (80354; 80355); Narrabeen, *Cleland* (AD 96103212); Asquith near the waterfall, *Blakely* 10.1917 & 2.1918 (80346; 80357); Asquith, *Blakely* 2.1918 (80358; 80359); Gibbrygong Creek, Hornsby, *Blakely* 4.1917 (80360); Gibbrygong track almost at top of hill, *Blakely* 4.1917 (80361); between junction of Berowra and Connells Creek, *Blakely* 1.1918 (80362); The Valley, Hornsby, *Blakely* & *Shireess* 2.1918 (80363); Hornsby, *Blakely* 12.1917 (80364; 75078); Curl Curl, *Deane* 1.1884 (80430); Curl Curl Lagoon, *Ellen* 6.1917 (80429); Waitara, *Blakely* 8.1918 (80422); Pearce's Corner, Pennant Hills Road, Wahroonga, *Sydenham* 2.1918 (80421); Pennant Hills Road, Wahroonga, *Blakely* 1.1920 (80420); Wahroonga, *Blakely* 8.1918 (80418; 80419); Warrawee, *Blakely* 5.1917 & 5.1917 & 12.1917 & 12.1917 (36532; 80417; 80415; 80416); St Ives, *Blakely*, *Shireess* & *Bott* 4.1918 (80408; 80409; 80410; 80411; 80412; 80413; 80414); Normanhurst, *Blakely* 12.1917 (80341); Normanhurst, *Blakely* & *Shireess* 2.1918 (80340; 80342); Pennant Hills Road, Normanhurst, *Blakely* 8.1918 (80343; 80344; 80345); e. 1 mile [1.6 km] W. of Normanhurst [Railway] Station, *Blakely* & *Shireess* 2.1918 (80339); Pymble, *Blakely* 1.1918 (80404-80407); Pennant Hills Railway Station, *Steel* 1.1918 (80338); Castle Cove, *McKee* 578, 1.1953 (80428); Lindfield, *Blakely* 5.1917 (80403); The Spit, *Blakely* & *Boorman* 8.1918 (80426; 80427); Beecroft, *Carne* & *Hudson* 2.1914 (80337); Mosman, *Cleland*, 1.1910 (80425; AD 96103211); Field of Mars, *Deane* 12.1883 (80336); Lavender Bay, *Blakely* 8.1918 (80424); Berry's Bay, *Blakely* 8.1918 (80423); Botanic Gardens, Sydney, *Mitchell* 8.1917 & 8.1920 (80431; 80437); Garden Palace Grounds, Sydney, *Camfield* 2.1893 (80432); Botanic Gardens, Sydney, *Blakely* 6.1918 & 6.1918 & 6.1919 & 7.1919 (80433; 80434; 80436; 80435); Botanic Gardens, Sydney, *Stanley* & *Rollinson* 5.1920 (80438); Botanic Gardens, Sydney, *Murphy* 12.1919 (36530); Nielsen Park, Vaucluse, *Blakely* 2.1918 (80390; 80391; 80392); Double Bay, *MaePherson* 6.1918 (80389); Bondi sand hills, *Blakely* 4.1917 (80388); Carr's Paddock, Carlton, *Blakely* 3.1918 (80386; 80387); Shipwright's Bay, Georges R., *Camfield* 1.1896 (36529); Georges R., *Camfield* 12.1896 (80385); Kurnell, *Boorman* 5.1906 (80384); Cronulla, *Cheek* 10.1910 (80383); Waterfall, *Thorpe* 1880, 1.1928 (80382); Bomaderry Creek, *Rodway* 7.1943 (80380); Shoalhaven Head, 5 miles [8 km] SE of Berry, *Salasoo* 3088, 1.1966 (90213). SOUTH COAST: Comerong Is., Shoalhaven R., *Rodway* 2.1922 (80402); Wollomboola Lake, N. of Jervis Bay, *Rodway* 4057, 5.1932 (80401); Currarong near Jervis Bay, *Rodway* 1.1926 (80400); Tomerong, *Rodway* 11.1924 (80398); Bowen Is., Jervis Bay, *Rodway* 4.1923 (80399); Sussex Inlet, *Gray* 5688, 2.1965 (80394); Sussex Inlet Heads, *Maiden* 2.1917 (80397); Narrawallee, Milton, *Cambage* 3501 & 4061, 12.1911 & 12.1913 (80396; 36528); Tabourie Is., S. of Milton, *Rodway* 2725, 5.1938 (80395). CENTRAL TABLELANDS: Nyes Creek near Wingello, *McGillivray* 5.1959 (80381). CENTRAL WESTERN SLOPES: Wybong Creek, Kars Springs, e. 23 miles [37 km] WNW. Seone, *Pickard* & *Coveny* 1231, 6.1969 (88083). Also in

Queensland (northwards to Noosa), and in eastern Victoria (to the Gippsland Lakes). Doubtfully present in North Island, New Zealand (cf. Barlow in *Austral. J. Bot.* 14: 451 (1966)).

### 5. AMYEMA Tiegh.

*Inflorescence* primarily a pedunculate many-rayed umbel of dichasias (triads), but showing various kinds and degrees of reduction in some species\*; bracts single under each flower (rarely more in reduced inflorescences). *Corolla* of free petals, usually 4-, 5- or 6-merous. *Anthers* basifixied, immobile, 2- or 4-locular; pollen trilobate. *Style* usually articulate at the base. *Aerial stem-parasitic shrubs* with or without runners†; leaves opposite†† or whorled (rarely scattered); penninerved to curvinerved. *Inflorescence* usually axillary, sometimes arising from internodes or from the runner.

A genus of about 90 species, ranging from Malaya and the Philippines to Australia and the western Pacific, the main centres of development being New Guinea and Australia. There are 32 species in Australia, thirteen of them occurring in New South Wales. The name is considered as a Greek neuter in “-ma”, but has been treated as feminine by many authors. Epithets are here given in the neuter form, irrespective of the form in their original publication under *Amyema*.

1. Leaves terete.
2. Corolla glabrous ..... *A. preissii* 1.
- 2.\* Corolla tomentose.
  3. Tomentum of the corolla short, grey. Corolla slender ..... *A. cambagei* 2.
  - 3.\* Tomentum of the corolla long, white. Corolla robust ..... *A. linophyllum* 3.
- 1.\* Leaves flat.
  4. Inflorescence capitate, consisting of two sessile triads ..... *A. maidenii* 4.
  - 4.\* Inflorescence umbellate.
    5. Flowers in dyads or triads, all pedicellate.
      6. Rays 2. Flowers in dyads ..... *A. bifurcatum* 5.
      - 6.\* Rays 3-6. Flowers in triads ..... *A. miquelii* 6.
    - 5.\* Flowers in triads or tetrads with at least the central flower sessile.
      7. Calyx woolly-white below, glabrous or nearly so above.
        8. Rays 2. Lateral flowers of the triads shortly pedicellate ..... *A. conspicuum* 7.
        - 8.\* Rays usually 4. All flowers of the triads sessile ..... *A. lucasii* 8.
      - 7.\* Calyx not as above.
        9. Rays of the umbel 2-3.
          10. Corolla less than 10 mm long ..... *A. gaudichaudii* 9.
          - 10.\* Corolla more than 10 mm long.

\* In species from New South Wales the inflorescence is usually a 2- to 4-rayed umbel of triads. Rays may be more than 4 in *A. miquelii* and *A. pendulum*. The flowers are in dyads in *A. bifurcatum*, and may be in tetrads in *A. pendulum*. The inflorescence of *A. maidenii* is capitate by reduction of the rays.

† Runners are absent in all species from New South Wales but some produce longitudinal haustorial strands under the host bark which sometimes appear at the surface.

†† In species from New South Wales the leaves are opposite (rarely scattered) and curvinerved.

11. Corolla glabrous ..... *A. miraculosum* 10.
- 11.\* Corolla shortly and densely tomentose ..... *A. quandang* 11
- 9.\* Rays of the umbel 3-5.
  12. Stems spreading, Lamina less than 10 cm long, rounded at the apex ..... *A. congener* 12.
  - 12.\* Stems pendulous. Lamina more than 10 cm long, acute at the apex ..... *A. pendulum* 13.

1. *Amyema preissii* (Miq.) Tiegh. in Bull. Soc. Bot. France 42: 84 (1895); Barlow in Austral. J. Bot. 14: 479 (1966).

SYNONYMY: *Loranthus preissii* Miq. in Lehm., Pl. Preiss. 1: 280 (1844), Blakely in Proc. Linn. Soc. N.S.W. 48: 140, t. 9 (1923); Black, Fl. S. Austral. ed. 2: 278 (1948); Blackall, How to Know W. Austral. Wildflowers 145 (1954); *Loranthus scoparius* Miq. in Lehm., Pl. Preiss. 1: 280 (1844); *Loranthus preissii* var. *didymus* Blakely in Proc. Linn. Soc. N.S.W. 48: 142 (1923) (as "didyma"); *Amyema scoparium* (Miq.) Tiegh. in Bull. Soc. Bot. France 42: 84 (1895).

NOMENCLATURAL NOTE: *Loranthus preissii* was treated as a synonym of *L. linophyllum* by Bentham in Fl. Austral. 3: 393 (1866) and by F. M. Bailey in Queensl. Fl. 5: 1380 (1902).

DISTRIBUTION: Western Plains and Far Western Plains, also in arid areas of all mainland States and the Northern Territory. Parasitic on many species of *Acacia* and occasionally on other hosts.

Glabrous. Leaves opposite or alternate or scattered, terete, acute (or the thicker ones rounded), 2-8 cm x 0.5-2.3 mm. Inflorescence axillary; peduncle 6-26 mm long; rays 2 (rarely 3), spreading, 3-13 mm long; pedicels of the lateral flowers of the triads spreading, 4-10 mm long; bracts spreading, acute or rounded, 1.5-2 mm long. Calyx funnel-shaped; limb truncate, 0.2 mm long. Corolla in the mature bud 18-26 mm long, inflated at the base, slender in the middle, strongly clavate and obtuse at the apex, 4- or 5-merous. Anthers (2)-3.5-5 mm long; free part of the filament 2.5-5 mm long. Fruit nearly globular, 8-10 mm long. Chromosome number:  $n = 9$  (Barlow in Austral. J. Bot. 14: 480 (1966)). Fl. Oct.-Apr.; fr. Apr.-Sept.

WESTERN PLAINS: near Mt Hope, Walker ANU 1322, 2.1964 (71486); Central Mine near Mt Hope, Bäuerlen 3.1904 (79882); 13 miles [21 km] SE. of Hillston, Constable 3.1959 (48547); 6 miles [10 km] by road E. of Rankin's Springs, Constable 7255, 12.1966 (96209); "Sylvanham", Gunbar, Bäuerlen 12.1900 (35296); "Sylvanham", Gunbar, Warren 2.1901 (35297). FAR WESTERN PLAINS: Queensland border north and a little west of Broken Hill, MacGillivray 4.1917 (79876); Tibooburra, Crouch 1.1913 (79877); Mt Wood, E. of Tibooburra, Constable 10.1949 (10483); Koonenberry Mtns., 62 miles [99 km] SSE of Milparinka, Constable 4614, 10.1963 (70798); Umberumberka, Osborn 8.1918 (79878); Umberumberka Water Reserve, Cheel 8.1926 (35298); Umberumberka, Johnson 8.1946 (79879); Broken Hill, Andrews 12.1917 (79881); 35 miles [56 km] N. of Wentworth, Rodd 8.1969 (88165); near Gol Gol, per Forestry Commission 1.1945 (79883); between Benanee and Balranald, Johnson 5.1955 (43766); Western Division, per Forestry Commission 2.1948 (79884). Also in arid areas of all mainland States and the Northern Territory.

2. *Amyema cambagei* (Blakely) Danser in Bull. Jard. Bot. Buitenz. 10: 294 (1929); Beadle, Evans & Carolin, Handb. Vasc. Pl. Syd. Dist. & Blue Mts 310 (1963); Barlow in Austral. J. Bot. 14: 461 (1966).

SYNONYMY: *Loranthus cambagei* Blakely in Proc. Linn. Soc. N.S.W. 48: 143, t. 10 (1923).

NOMENCLATURAL NOTE: This species was included in *L. linophyllum* Fenzl by Bentham and later authors.

DISTRIBUTION: Eastern half of the State (Coast, lower parts of Tablelands, Western Slopes and nearer Western Plains), also in Queensland, northwards to the Atherton Tableland. Almost exclusively parasitic on several species of *Casuarina*, especially *C. cunninghamiana* and sometimes *C. glauca* and *C. cristata*.

Young stems, leaves, inflorescences and flowers shortly and densely white-to grey-tomentose; tomentum much sparser on older vegetative parts. Leaves clustered, lincar, terete, flexuous, (5)-8-14-(20) cm x 1-1.3-(1.7) mm, acute or shortly mucronate. Inflorescence axillary; peduncle slender, 8-17 mm long; rays mostly 3 (often 2 or 4), spreading, 4-6 mm long; pedicels of the lateral flowers of the triads spreading, 3-6 mm long; bracts narrow, acuminate, acute, 1-2 mm long. Calyx cup-shaped; limb truncate, 0.3 mm long. Corolla in the mature bud slender, 15-21 mm long, strongly clavate, acute. Anthers narrow oblong, 1.5-2 mm long; free part of the filament 2.5-3-(4.5) mm long. Fruit small, globular. Chromosome number:  $n = 9$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 154 (1963)). Fl. Most of year; fr. Dec.-Feb.

NORTH COAST: Casino, *Irby* 3.1917 (79856); Woodburn, *Bäuerlen* 7.1895 (79855); Bom Bom Creek, Clarence R., *Oxenford* 9.1948 (79857); Pacific Highway, 8 miles [13 km] S. of Urunga, *Coveny* 2154, 9.1969 (88159); Bowman R., 30 miles [48 km] W. of Gloucester, *Blaxell* 33 & *Coveny*, 9.1968 (112263); 2 miles [3.2 km] N. of Tuncurry, *McGillivray* 8.1965 (89185); Upper Allyn Valley, *Vickery* & *Fraser* 11.1936 (79858); Telligerry near Booral, *Leichhardt* 10.1843 (79859); Nelson Bay, *Lithgow* 3.1965 (74304); c. 10 miles [16 km] SW. of Bulga, *Salasoo* 2490, 10.1962 (58696); West Maitland, *Thompson* 5.1899 (79860); Belmont, *Dwyer* 2.1920 (69233). CENTRAL COAST: Mangrove Creek, 100 yards [9 m] W. of bridge, up Oystershell road, *Pickard* 1.1969 (88154); mouth of Mangrove Creek, Hawkesbury R., *McKee* 751, 10.1953 (79861); Agnes Banks, near Richmond, *Farlow* 11.1902 (79865); between Newport and Barrenjoey, *Maiden* & *Cambage* 8.1905 (79862); Grose Vale, *Blakely* 5.1929 (79863); Grose R. and banks of Nepean R. near Grose R., *Maiden* & *Cambage* 9.1906 (79864, type); Castlereagh near Penrith, *Fraser* 10.1934 (79866); Nepean R. near Penrith, *Constable* 12.1948 (9341); Nepean R. near Wallacia, *Hindwood* 12.1936 (79867); Nepean R. near Cobbity, *Johnson* 9.1951 (79868); Lower Coxs R. opposite Green Wattle Creek, *Johnson* 6.1946 (79869); Kowmung R. between Church and Connally Creeks, *Garden* 9.1951 (79830). SOUTH COAST: Comerong Is., Shoalhaven R., *Rodway* 856 & 886, 9.1932 (89512; 89701); Wogamia, S. bank of Shoalhaven R., 7 miles [11 km] W. of Nowra, *Rodway* 3088 & sine numero, 4.1940 (79870; 89508); Crookhaven R., Pyree, *Rodway* 1095, 7.1933 (89507); Crookhaven, *Hadley* 4.1941 (89703). NORTHERN TABLELANDS: Sandy Creek, Baldersleigh, 20 miles [32 km] W. of Guyra, *McKie* 9.1930 (79833); Guy Fawkes R., *Whate* 5.1949 (79832). CENTRAL TABLELANDS: Wombeyan Caves, *Wiburd* 11.1935 (35556). SOUTHERN TABLELANDS: Murrumbidgee R., at Uriarra Crossing, W. of Canberra, *Pullen* 2090, 6.1960 (79828); Uriarra Crossing, *Derbyshire* 1251, 10.1963 (69283); Uriarra Crossing, *McKee* 9744, 12.1962 (59135); Cotter R., *Carter* 8.1935 (79827). NORTH WESTERN SLOPES: Wallangra, *Boorman* 11.1912 (79834); Warialda, *de Beuzeville* 10.1913 (79835); Warialda, *Woolcott* 8.1929 (79836); Ironbark Creek near Barraba, *Rodway* 9.1929 (89509); Woods Reef, Barraba, *Catty* 7.1938 (79837); Maules Creek, 20 miles [32 km] NE. of Boggabri, *Cambage* 2434, 11.1909 (79838); Coolie Camp, Baradine, *Chippendale* & *Constable* 5.1951 (19265); Gunnedah, *Forsyth* 10.1899 (79840); Bugaldie, 17 miles [27 km] NW. of Coonabarabran, *Meek* 11.1919 (79841); Timor Rock, W. of Coonabarabran, *Salasoo* 1.1962 (79842); Warrumbungle Ranges, *Forsyth* 10.1899 (79843); Ogunbil, *Blakely* 4.1927 (79839). CENTRAL WESTERN SLOPES: 20 mils [32 km] N. of Merriwa, *Story* 7002, 12.1959 (79846); Terell Creek, Kars Springs, c. 25 miles [40 km] WNW. of Scone, *Pickard* & *Coveny* 1206, 6.1969 (88087); Scone, *Jackson* 11.1926 (79844); Trangie, *Froggatt* 11.1921 (35557); Dubbo, *Stoate* 2.1920 (79845); Goulburn R., 35 miles [56 km] NW. of Rylstone, *Ryan* 8.1969 (88171); Mudgee, *Fletcher* (79847); Mudgee, *Cox* 6.1909 (79848); Cudgewong R., Apple Tree Flat, *Tindale* & *Ingram* 10.1953 (79849); Bowan Park near Cudal, *Blakely* 10.1906 (79831); Barmedman, *Dwyer* 4.1915 (79850); Temora, *Dwyer* 10.1915 (79851). SOUTH WESTERN SLOPES: Narrandera, *Alkin* 12.1896 (79852); Tacmas Bridge, S. of Yass, *Harper* 8.1908 (79829); Burrinjuck, *Boorman* 2.1911 (79853); Burrinjuck, *Cheel* 1.1912 (79854). WESTERN PLAINS: Boomi, *Burrow* 12.1917 (79826); Mungindi, *Cambage* 4379, 9.1922 (79825); 40-50 miles [64-80 km] NW. of Collarenebri, *Jackson* 12.1911 (79824); "Yarrawin" Station, Barwon R., *Froggatt* 12.1913 (79819); West Bogan, *Bäuerlen* 2.1900 (79817); Jews Lagoon, 50 miles [80 km] W. of Narrabri, *Blakely* 8.1936 (79821); Narrabri, *Lyne* 8.1904 (79823); Pilliga, *Boorman* 8.1907 (79820); Pilliga, *Rupp* 9.1932 (80475); Yarrie Lake road, c. 15-16 miles [24-26 km] WSW. of Narrabri, *Jensen* 8.1911 (79822); Baan Baa, *Richards* 4.1963 (66040), Nyugan, *Rogers* 9.1935 (79818). Also in Queensland, northwards to the Atherton Tableland.

3. *Amyema linophyllum* (Fenzl) Tiegh. in Bull. Soc. Bot. France 41: 507 (1894); Barlow in Austral. J. Bot. 14: 470 (1966).

SYNONYMY: *Loranthus linophyllum* Fenzl, Enum. Pl. Hueg. 65 (1837); Benth., Fl. Austral. 3: 393 (1866), in part; Moore & Betche, Handb. Fl. N.S.W. 228 (1893), in part; F. M. Bail., Quensl. Fl. 5: 1380 (1902), in part; Blakely in Proc. Linn. Soc. N.S.W. 48: 145 (1923); Ewart, Fl. Vict. 425 (1931), in part; Black, Fl. S. Austral. ed. 2: 278 (1948); Blackall, How to Know W. Austral. Wildflowers 145 (1954).

NOMENCLATURAL NOTE: As used by Benthem, etc., *Loranthus linophyllum* was used to include material of *Amyema cambagei*.

DISTRIBUTION: Widespread in temperate Australia, the two subspecies having disjunct occurrences in southwestern and southeastern Australia respectively. The species is exclusively parasitic on *Casuarina*, usually on *C. luehmannii*, *C. cristata* and *C. obesa*.

Whole plant (especially the flowers) densely white- (rarely pale brown-) tomentose or the leaves and stems glabrous when older. Leaves opposite or clustered, terete, 6-12 cm x (1)-1.3-2-(2.5) mm (rarely shorter and/or thinner in specimens from W. Austral.), flexuose, obtuse at the apex. Inflorescence axillary; peduncle 5-10 mm long; rays usually 3, spreading, 2-6 mm long; pedicels of the lateral flowers of the triads 1-3.5 mm long; bracts acute, keeled, erect, 2-3 mm long. Calyx cup-shaped; limb erect, truncate, 0.7-1 mm long. Corolla in the mature bud more or less robust, clavate, obtuse, 16-26 mm long, 4- or 5-merous. Anthers 2.5-3 mm long; free part of the filament (3.5)-4-5 mm long. Fruit globular, c. 5 mm in diam., crowned by the persistent calyx limb.

One subspecies in New South Wales:

*Amyema linophyllum* ssp. *orientale* Barlow in Austral. J. Bot. 14: 470 (1966).

NOMENCLATURAL NOTE: See under the species.

DISTRIBUTION: Western Slopes and Plains, also in southeastern Queensland, western Victoria and southeastern South Australia. Although none of the localities cited is strictly on the North Western Slopes, the subspecies undoubtedly occurs there also. Usually parasitic on *Casuarina luehmannii* and *C. cristata*.

Peduncle thickly tomentose, 5-8 mm long; rays 2-4 mm long; pedicels of the lateral flowers of the triads 1-2 mm long. Corolla in the mature bud 16-22-(24) mm long. Chromosome number:  $n = 9$  (Barlow, in Proc. Linn. Soc. N.S.W. 88: 155 (1963)). Fl. Dec.-Feb.; fr. Aug.

CENTRAL WESTERN SLOPES: E. of Biddon near Gilgandra, *Walker* ANU 1284, 2.1964 (71487, holotype); Narromine, *Shepherd* 11.1902 (79934); Gungal, *Boorman* 12.1904 (79935); Eugowra, *Cambage* 1.1900 (79936); Barmedman, *Dwyer* 5.1916 (79937); between Temora and Barmedman, *Dwyer* 10.1915 (79938). SOUTH WESTERN SLOPES: Walla Walla, c. 10 miles [16 km] SW. of Culcairn, *Kotzur* 2.1953 (22463). WESTERN PLAINS: Boomi, *Burrow* 12.1917 (79939); 50 miles [80 km] N. of Bourke, *Barlow* 212, 12.1960 (BR1U 137); Narrabri West, *Boorman* 8.1907 (79940); near Narrabri, *Burrow* 2.1916 (79941); Narrabri, *Cleland* 2.1912 (AD 96103235); between Boggabri and Narrabri, *Jensen* 8.1911 (79942); Louth, *Abrahams* 9.1910 (80466); Byrock district, *Deane* 3.1899 (79943); "Wittagoona", 50 miles [80 km] NW. of Cobar, *Abrahams* 1.1910 (79944); West Bogan, *Bauerlen* 2.1900 (79945); Griffith, *Blakely* & *Shires* 7.1928 (79947); near Balranald, *Symon* 1.1954 (ADW 9461); Deniliquin, *Wilshire* 1.1907 (79948); 25 miles [40 km] SE. of Deniliquin, *Leigh* 5434, 2.1966 (80465); between Thule Creek and Barham, *Johnson* 5.1955 (43785; NT); Moama, *Watson* 12.1904 (79949). FAR WESTERN PLAINS: Campbell's Creek, Broken Hill district, *Morris* 8.1920 (79946); near Quandang Hotel, *MacGillivray* 1.1923 (ADW 16496). Also in southeastern Queensland, western Victoria and southeastern South Australia. Although none of the localities cited is strictly on the North Western Slopes of New South Wales the subspecies undoubtedly occurs there also.

4. *Amyema maidenii* (Blakely) Barlow in Proc. Linn. Soc. N.S.W. 87: 57 (1962) and in Austral. J. Bot. 14: 472 (1966).

SYNONYMY: See under the subspecies.

MISAPPLIED NAMES: Benth. Fl. Austral. 3: 395 (1866), misapplied the name *Loranthus quandang* Lindl. (in part) to this species. Other authors; Ewart, Fl. Vict. 425 (1931); Black, Fl. S. Austral. 279 (1948) and Gardner, Enum. Plant. Austral. Occ. 36 (1930), used *Loranthus quandang* Lindl. or *Amyema quandang* (Lindl.) Tiegh. variously for this and other taxa, including *Amyema quandang* (Lindl.) Tiegh. sens. strict.

DISTRIBUTION: Arid inland areas of temperate Australia from Narrabri, N.S.W., to Giles, W. Australia, almost exclusively parasitic on *Acacia* spp.

Vegetative parts densely white- or brown-tomentose (soon becoming glabrous in ssp. *angustifolium*); inflorescence and flowers densely white-tomentose (rarely glabrous or nearly so). Leaf-lamina oblanceolate to ovate, glaucous, (2)-3-6 x (0.5)-1-1.8-(2.3) cm, rounded at the apex, attenuate to contracted at the base; petiole 0.1-1.0 cm long. Inflorescence axillary, consisting of a pedunculate head of 2 (rarely 3) closely sessile opposite triads; peduncle (10)-17-25-(30) mm long, dilated and sometimes angular at the apex; central bracts oblong to triangular, spreading or reflexed, acute or rounded at the apex, 2-5 mm long; lateral bracts closely enveloping the calyces, obtuse or rounded, 2-3 mm long. Calyx somewhat angular by mutual pressure; limb truncate, 1 mm long. Corolla in the mature bud slender, (14)-18-24-(30) mm long, strongly clavate, acute or obtuse, usually green. Anthers narrow-oblong, (1.5)-2-3 mm long; free part of the filament 5-9 mm long. Fruit ellipsoidal, c. 8 mm long, constricted near the apex and crowned by the distinct calyx limb.

Two rather well marked subspecies are distinguishable:

1. Lamina oblong to ovate, mostly 3-4 cm long, 1-1.8 cm wide. Petiole 0.5-1 cm long. Whole plant tomentose. Usual hosts *Acacia ancura* and *A. tetragonophylla* ..... ssp. *maidenii* a.
- 1.\* Lamina oblanceolate to oblong, mostly 3-6 cm long, 0.5-1 cm wide. Petiole rather obscure, 0.1-0.5 cm long. Adult leaves, bracts and peduncles glabrous or nearly so; other parts sparsely tomentose. Usual host *Acacia harpophylla* ..... ssp. *angustifolium* b.

a. *Amyema maidenii* ssp. *maidenii*. Illustration: Blakely in Proc. Linn. Soc. N.S.W. 49: t. 21 (1924).

SYNONYMY: *Loranthus maidenii* Blakely in Proc. Linn. Soc. N.S.W. 49: 87 (1924); Black, Fl. S. Austral. ed. 2: 279 (1948); Blackall, How to Know W. Austral. Wildflowers 145 (1954); *Diplatia maidenii* (Blakely) Danser in Bull. Jard. Bot. Buitenz. 10: 312 (1929).

DISTRIBUTION: Northern part of Western and Far Western Plains, further distributed to southwestern Queensland, South Australia, Central Australia and the extreme east of Western Australia. Usually parasitic on *Acacia ancura* and *A. tetragonophylla* but also recorded on *A. kempeana*, *A. victoriac* and several other *Acacia* spp.

Distinguishing characters are as set out in the key. Chromosome number:  $n = 9$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 155 (1963)). Fl. Most of year; fr. no information.

WESTERN PLAINS: 33 miles [53 km] S. of Ennagonia on Bourke-Barrington road, *Moore* 3855, 7.1966 (112233); Tarcoola, *Boorman* 11.1903 (80053, lectotype); "Berida", via Bourke, *Henderson* 66/5/2a, 5.1966 (82052); Red Banks, Darling R., *Helms* 5.1890 (80051); Cobar, *Abrahams* 7.1910 (80052). FAR WESTERN PLAINS: Queensland border N. and a little W. of Broken Hill, *MacGillivray* 4.1917 (80050); Mt Stuart, E. of Tibooburra, *Constable* 10.1949 (10484); Wanaaring, *Johnson* 547/145, 6.1947 (6055); Paldrumatta Bore, SE. of Milparinka, *Corbett* 9.1901 (80048); Paroo R. district, *Betche* 9.1900 (80049); Tarella, 30 milcs [48 km] NW. of Wilcannia, *Bäuerlen* 8.1887 (80047); near Wilcannia, *Bailey* 10.1938 (80046);

Umberumberka, Johnson 8.1946 (80045); Silverton, Whaite 743, 8.1950 (80044); Broken Hill, Morris 3.1920 & 3.1920 & 5.1920 & 10.1920 & 12.1920 & 4.1921 & 8.1926 (7921; 80467; 7922; AD 96103095; AD 96103129; 80042; 80040); Broken Hill, Andrews 9.1918 (80043); near Thackaringa, c. 20 miles [32 km] W. of Broken Hill, Morris 5.1920 (80041). Further distributed to southwestern Queensland, South Australia, Central Australia and the extreme east of Western Australia.

b. *Amyema maidenii* ssp. *angustifolium* Barlow in Austral. J. Bot. 14: 473 (1966).

DISTRIBUTION: Northeastern part of Western Plains, MacIntyre to Namoi Rivers, also in Queensland within the range of *Acacia harpophylla* ("Brigalow"). Usually parasitic on *Acacia harpophylla* but also recorded on *A. cambagei*.

Distinguishing characters are as set out in the key. Chromosome number:  $n = 9$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 155 (1963)). Fl. Sept.; fr. no information.

WESTERN PLAINS: 17 miles [27 km] SW. of Boggabilla, Barlow 52, 4.1960 (BR1U 90); Mungindi, Cambage 9.1922 (80054); Narrabri, Bäuerlen 2842, 6.1901 (80056); Pilliga, Rupp 9.1932 (80057, type). Also in Queensland within the range of *Acacia harpophylla* ("Brigalow").

5. *Amyema bifurcatum* (Benth.) Tiegh. in Bull. Soc. Bot. France 41: 507 (1894); Barlow in Austral. J. Bot. 14: 459 (1966).

SYNONYMY: *Loranthus bifurcatus* Benth., Fl. Austral. 3: 393 (1866); F. M. Bail., Queensl. Fl. 5: 1380 (1902); *Loranthus ferruginiflorus* W. V. Fitzg. in J. Roy. Soc. W. Austral. 3: 136 (1918); Blakely in Proc. Linn. Soc. N.S.W. 47: 397, t. 41 (1922); *Loranthus ferruginiflorus* var. *linearifolius* Blakely in Proc. Linn. Soc. N.S.W. 47: 398 (1922) (as "linearifolia"); *Amyema ferruginiflorum* (W. V. Fitzg.) Danser in Bull. Jard. Bot. Buitenz. 10: 295 (1929).

MISAPPLIED NAMES: *Loranthus bifurcatus* Benth. was misapplied by Blakely in Proc. Linn. Soc. N.S.W. 47: 395, t. 40 (1922), to *Amyema biniflorum* Barlow, which is a native of Queensland and the Northern Territory. The collection cited by Blakely from Mt Lindesay is referable to *A. miquelianii* (q.v.).

DISTRIBUTION: North Coast and North Western Slopes, from Grafton to Gunnedah (but absent from the Tablelands), also in Queensland, Northern Territory and the north of Western Australia. Mostly parasitic on several species of *Eucalyptus*, all those recorded belonging to the "Corymbosae" and "Macranthae". The species has twice been recorded on *Angophora* spp.

Glabrous except for the young parts, flowers and usually the inflorescences sparsely to densely rusty-tomentose. Leaf-lamina linear to lanceolate, 10-35 x 0.4-2.5 cm, often falcate, pendulous, acute to rounded at the apex, very gradually attenuate at the base; petiole terete, winged, 1-4 cm long. Inflorescence axillary; peduncle 15-40 mm long; rays 2 (very rarely 4), (2)-6-20 mm long; flowers in dyads on pedicels (1)-3-7 mm long; central bract (i.e., at the apex of the ray) triangular, erect, 1 mm long; bracts subtending the flowers orbicular, concave, c. 3 mm long, enlarging under the fruit. Calyx cup-shaped; limb entire, 0.7 mm long. Corolla in the mature bud robust, 22-30 mm long, slightly to strongly inflated at the base, clavate, obtuse. Anthers 4-9 mm long; free part of the filament usually about half as long. Fruit globular, c. 10 mm in diam., with a prominent nipple left by the articulation of the style above the base. Chromosome number:  $n = 9$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 154 (1963)). Fl. Mar.-Nov.; fr. July.

NORTH COAST: Casino, Irby 3.1917 (79460); near "Warringah" property, c. 5 miles [8 km] SSW. of Wyan, Clarke, Pickard & Coveny 1820, 7.1969 (88173); Mt Mulligan, 4 miles [6.4 km] E. of Ramornie, Blakely & Shiress 7.1922 (34975; 79461); Ramornie, 3 miles [4.8 km] NW. of Copmanhurst, Blakely & Shiress 7.1922 (34976); Sugarloaf, 5 miles [8 km] W. of

Ramornie, *Blakely & Shiress* 7.1922 (36061); Ramornie road, *Oxenford* 8.1948 (79462); Blaxlands Creek, between Grafton and Nymboida, *McKee* 5713, 8.1957 (79463); Bom Bom State Forest, 3 miles [4.8 km] S. of Grafton, *Floyd* 4.1957 (79464). NORTH WESTERN SLOPES: Bereen, 19 miles [30 km] NW. of Barraba, *Anderson* 8.1938 (34977); Gunnedah, MacDonald 4.1898 (79466); 6 miles [10 km] from Bugaldie, *Jensen* 11.1906 (88186); Warrumbungle Mtns., W. of Coonabarabran, *Mead* 7.1966 (48408). WESTERN PLAINS: Narrabri, *Bäuerlen* 7.1901 (79465). Also in Queensland, Northern Territory and the north of Western Australia.

6. *Amyema miquelii* (Lehm. ex Miq.) Tiegh. in Bull. Soc. Bot. France 41: 507 (1894); Beadle, Evans & Carolin, Handb. Vasc. Pl. Syd. Dist. & Blue Mts 310 (1963); Barlow in Austral. J. Bot. 14: 474 (1966).

SYNONYMY: *Loranthus miquelii* Lehm. ex Miq. in Lehm., Pl. Preiss. 1: 280 (1844); Blakely in Proc. Linn. Soc. N.S.W. 47: 401, t. 45 (1922); Ewart, Fl. Vict. 426 (1931); Black, Fl. S. Austral. ed. 2: 278 (1948); Blackall, How to Know W. Austral. Wildflowers 145 (1954); *Loranthus aurantiacus* A. Cunn. ex Hook. in Mitchell, J. Exped. Trop. Austral. 101 (1848) [non Elm. (1913), non Ridl. (1917)]; *Loranthus miquelii* var. *micranthus* F. Muell. ex Miq., Ned. Kruidk. Arch. 4: 105 (1856); *Dendrophthoe miquelii* (Lehm. ex Miq.) Ettingsh. in Denks. Akad. Wiss. Math.-Nat. 32: 66 (1871); *Aniycma aurantiaca* (A. Cunn. ex Hook.) Tiegh. in Bull. Soc. Bot. France 41: 507 (1894); *Loranthus miquelii* var. *minor* Blakely in Proc. Linn. Soc. N.S.W. 47: 406 (1922).

NOMENCLATURAL NOTES: Bentham, Fl. Austral. 3: 394 (1866), and F. M. Bailey, Queensl. Fl. 5: 1381 (1902), included *Loranthus miquelii* Lehm. ex Miq. as a synonym of *Loranthus pendulus* Sieber ex DC. As used by Ewart & Davies, Fl. N. Terr. 88 (1917) the latter also included specimens of *Amyema miquelii*.

DISTRIBUTION: All subdivisions of the State, but apparently rare in far western areas and absent from the higher parts of the Tablelands. Further distributed to all parts of the continent except possibly for Cape York and parts of the Channel Country. Parasitic on many species of *Eucalyptus* and also common on *Aeacia* spp. (especially of the *A. deerevens* group) in some areas.

Young shoots, calyx and sometimes the inflorescence and corolla shortly and sparsely to densely brown- (rarely white-) tomentose; otherwise glabrous. Stems slender, pendulous, (0.7)-1.5-3-(5) m long. Leaf-lamina linear to nearly ovate, (3)-7-15-(25) x 0.5-3 cm, commonly falcate, glabrous but often pigmented yellow to red, curvinerved to penninerved, acute to rounded at the apex, attenuate at the base; petiole distinct, slender, 1-5 cm long. Inflorescence axillary; peduncle 10-50 mm long; rays (3)-4-5-(7), usually with a bract at the apex, (3)-6-15-(19) mm long; flowers in triads with all flowers on pedicels (1)-3-6 mm long or rarely with the central flower sessile or in tetrads with the central flower sessile; bracts acute or rounded, keeled, 1-1.5 mm long. Calyx cylindrical to funnel-shaped; limb truncate or weakly lobed, sometimes irregularly split, obsolete or up to 1.5 mm long. Corolla in the mature bud 15-28 mm long, sometimes inflated at the base, slender in the middle, clavate and acute at the apex, 5- to 7-merous. Anthers linear to oblong, 1.5-4 mm long; free part of the filament 1.5-2 times as long. Fruit cylindrical to ovoid or pear-shaped, truncate or crowned by the calyx limb, 8-12 mm long. Chromosome number:  $n = 9$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 155 (1963)). Fl. Jan.-Aug.; fr. Aug.-Dec.

NORTH COAST: Mt Lindesay, *White* 10.1921 (79479); near Royal Camp State Forest, e. 15 miles [24 km] SW. of Casino, *Turner* 9.1955 (79488); Sawpit Creek, Woodburn, *Bäuerlen* 7.1895 (79487); \*Totties Mtn., Ramornie, *Blakely & Shiress* 7.1922 (89480); Glendon near Singleton, *Leichhardt* 1843 (79486); 10 miles [16 km] W. of Singleton, *Story* 7139, (CANB 80253); Pokolbin, *Cambage* 1497, 4.1906 (79485). CENTRAL COAST: Brooklyn, Hawkesbury R., *Blakely & Shiress* 1.1918 (36050); \*Brooklyn Park, *Blakely* 3.1918 (36049); \*Berowra Creek below punt, *Blakely* 3.1918 (79489); \*Gibberygong Creek, *Blakely* 3.1918 (79490); \*Bobbin Head Road near Turramurra, *Blakely* 6.1917 (79491); Turramurra, *Blakely* 6.1917 (80469);

\*Pymble, *Blakely* 8.1917 & 1.1918 (36048; 79492); \*Killara, *Blakely* 4.1918 (36047); \*Killara, c.  $\frac{1}{2}$  mile [0.8 km] SW. of [Railway] Station, *Blakely & Shiress* 6.1919 (79493; 112239); Lower Castlereagh, Hawkesbury R., *Farlow* 7.1905 (79484); Kingswood, *Blakely & Shiress* 9.1920 (79483); St Marys, *Blakely & Baorman* 9.1920 (79482); Liverpool district, *Boorman* 6.1918 (79481); \*Cambewarra road near Nowra, *Radway* 11.1923 (89503). SOUTH COAST: Nowra, *Bäuerlen* 3.1901 (79480); \*Falls Creek, *Rodway* 4.1925 (89513). NORTHERN TABLELANDS: \*Stannum via Deepwater, *Cambage 1601*, 7.1907 (89479); Gowrie, 22 miles [35 km] W. of Guyra, *McKie* 4.1928 (79376; 80468); Pineh Flat, Guyra district, *McKie 113*, 4.1928 & 2.1928 (79375; 79374); Donald, Armidale, *Campion* 11.1902 (79373); Armidale, *Davis* 1.1941 (89504); between Bendemeer and Uralla, *Jahnsen* 11.1951 (19712). CENTRAL TABLELANDS: Upper Meroo, S. of Mudgee, *Baorman* 1.1913 (79372); Hill End, *Le Messurier* 11.1902 (79371); Capertee, *Cross* 10.1938 (36051); The Lime Kilns-Wattle Flat road, *Canstable* 4685, 1.1964 (70349); Trunkey, *Baorman* 11.1918 (79369); Wombeyan Caves, *Wiburd* 11.1935 (79368); between Bullio and Wollondilly R., *Cheel & Cleland* 12.1919 (79367). SOUTHERN TABLELANDS: Sutton road, within 1 mile [1.6 km] of the A.C.T. boundary, *Walker ANU 206*, 2.1962 (69303); between Queanbeyan and Burbong on road to Bungendore, *Darbyshire 163 & 164*, 2.1961 (79378; 79565); Queanbeyan, *Breakwell* 8.1913 (79366); Paddys R. district, Tidbinbilla road, *Wilsan 455*, 3.1957 (79365). NORTH WESTERN SLOPES: Wallangra, *Boorman* 11.1912 (79379); Warialda, *Cheel* 8.1929 (79380); Terry Hie Hie, SE. of Moree, *Julius* 9.1912 (79382); Howell, *Maiden & Boorman* 8.1905 (36053); Tingha, *Cambage 4442*, 7.1924 (79381); "Bilambil", 10 miles [16 km] W. of Baradine, *Canstable* 3.1951 (19590); Baradine district, *Jensen* 8.1911 (79389); Attunga State Forest, *Taylor* 2.1921 (36052); range near Tamworth, *Blakely* 4.1927 (79383); Tamworth, *Carne* 8.1912 (79384); Parish of Goran, Co. Pottinger, c. 20 miles [32 km] SW. of Gunnedah, *Simon* 11.1912 (79385); Borah Creek, 5-6 miles [8-10 km] N. of Rocky Glen, *Jensen* 8.1911 (79386); 7 miles [11 km] from Coonabarabran on Gunnedah road, *Jensen* 8.1911 (79387); Coonabarabran, *Meek* 10.1919 (79388; 112237); Timor Rock, W. of Coonabarabran, *Salasoa 2223*, 1.1962 (79390). CENTRAL WESTERN SLOPES: Wongoni between Dunedoo and Merrygoen, *Johnsen & Constable* 8.1950 (16460); Dalkeith near Cassilis, *Leichhardt* c. 1843 (79511); Blue Mtn. Creek, Denison, near Moonan Brook, *Hamilton* 2.1924 (36060); Owens Gap, W. of Seone, *Cambage 1688*, 8.1907 (79510); Seone, *Breakwell* 8.1913 (79509); Seone, *White* 2.1922 (79508); Goonoo State Forest between Dubbo and Mendooran, *Chippendale & Constable* 9.1951 (17523); Minore, *Boorman* 2.1899 (79512); 4 miles [6.4 km] from Ulan on Gulgong road, *Stary* 6847, 10.1959 (79513; CANB 71819); foot of Mt Dangar, S. of Gungah, *Johnsen* 4.1953 (23429); Moolarben Creek between Cooyal and Wollar, *Jahnsen & Canstable* 8.1950 (14518); Rylstone, *Baker* 12.1890 (79515); Pinnacle Swamp road, Rylstone, *Crass* 10.1938 (36054); Euchareena, *Baorman* 6.1900 (79514); Bowan Park near Cudal, *Blakely* 10.1906 (79370; 112238); Bushy Hill, c. 1 mile [1.6 km] NW. of Grenfell, *Salasoa 2926*, 12.1964 (73761); Grenfell, *Bäuerlen* 4.1901 (36055); Lachlan R., *Cunningham 134*, 1817 (K, type of *Loranthus aurantiacus* A. Cunn. ex. Hook., photo in AD; BM); Weddin State Forest, 15 miles [24 km] SW. of Grenfell, *Curtin* 3.1953 (79516); between Barmedman and Wyalong, *Dwyer* 3.1915 (89481); Barmedman, *Dwyer* 4.1915 & 5.1916 (79517; 36056). SOUTH WESTERN SLOPES: Narrandera, *Jahnsen 547/27*, 5.1947 (5069); Bowning Hill, *Cambage* 8.1909 (79518); Albury road near Wagga, *Dwyer* 8.1920 (79520); Tumut, *Maiden & Baorman* 8.1903 (79519); Wymah Gap, *McBarron 4514*, 2.1950 (79521). WESTERN PLAINS: Mungindi, *Cambage 4383*, 9.1922 (79494); 40-50 miles [64-80 km] NW. of Collarenebri, *Jackson* 12.1911 (79495); Carinda-Walgett road, 10-mile [16 km] peg, *Chippendale & Constable* 5.1951 (19236); near Narrabri, *Burrow* 2.1916 (79496); Coonamble, *Breakwell* 8.1912 (79497); Warren-Coonamble road, *Deane* 6.1896 (79498); Coolabah, *Peacock* 1901 (36058; NT); Girilambone, *Bäuerlen* 3.1900 (36059); Nyngan, *Morris* 9.1927 (79499); Macquarie R., 7 miles [11 km] S. of Warren, *Canstable* 4.1952 (20140); Lake Cargelligo, *Dwyer* 11.1915 (79502); Cargelligo, *Horan* 1.1913 (79501); Hillston, *Cheel* 3.1926 (79503); 40 miles [64 km] from Hay, *Murray per Shiress*, 8.1918 (79504; 88185); Southwest Plains below Narrandera, *Dwyer* 5.1922 (79505); "Zara", Wanganella, *Officer* 5.1917 & 1.1922 (89483; 79506); near junetion of Edwards R. and Gulpa Creek, *Whaite 1418*, 5.1953 (79507). FAR WESTERN PLAINS: Corona, 60 miles [96 km] N. of Broken Hill, *Lilier* 3.1929 (ADW 16500); Menindee, *Morris 1306*, 12.1924 (79500); 2 miles [3.2 km] SW. of Pooncarie, *Johnsen & Constable* 3.1959 (48538); Darling R., 10 miles [16 km] N. of Wentworth, *Marris* 4.1924 (36057; ADW 1113); between Benanee and Balranald, *Jahnsen* 5.1955 (36598); Euston, *Seibner* 4.1903 (89482). Further distributed to all parts of the continent except possibly for Cape York and parts of the Channel Country.

The species shows considerable variability, some of which has a regular pattern, and several races can be recognized. In New South Wales the typical race is widespread and another rather distinct race occurs in some coastal and tablelands areas, distinguished by its long, narrow leaves, sparsely brown-tomentose inflorescences and small dimensions of the inflorescences and flowers. Specimens of the latter are marked (\*) in the citation list.

The following collection is more or less intermediate between *A. miquelii* and *A. pendulum* and may be a hybrid.

SOUTHERN TABLELANDS: 1 mile [1.6 km] past Tharwa on Naas road, A.C.T., *Derbyshire* 98, 1.1961 (79560).

7. *Amyema conspicuum* (F. M. Bail.) *Danser* in Bull. Jard. Bot. Buitenz. 10: 294 (1929); Barlow in Austral. J. Bot. 14: 463 (1966).

SYNONYMY: See under the subspecies.

DISTRIBUTION: The species comprises three subspecies with disjunct occurrences in coastal northeastern Australia, Arnhem Land and the Eastern Highlands of New Guinea respectively, occurring usually in wet forests (rainforest) on a wide range of host species.

Glabrous except for the very young parts, inflorescences and calyces white-brown-tomentose. *Leaf-lamina* oblong to ovate, 3.5-8 x 1.2-4.5 cm, rounded at the apex, gradually to abruptly attenuate at the base; petiole terete, 1-6 mm long. *Inflorescences* few to several at the nodes; peduncle (3)-4-6-(9) mm long; rays 2, only slightly divergent, densely tomentose above, glabrous or sparsely tomentose below, 1-2.5 mm long; pedicels of the lateral flowers of the triads with the same tomentum as the rays, 0.5-1 mm long; bracts mostly acute, 1-2 mm long, ciliate. *Calyx* cylindrical or slightly funnel-shaped, densely white- or pale brown-tomentose below, almost glabrous above; limb entire, 1 mm long. *Corolla* in the mature bud slender, 14-25 mm long, weakly clavate, acute; petals often minutely tomentose on the inside at the tip. *Anthers* 1.5-2 mm long; free part of the filament 6-8-(12) mm long. *Fruit* globular below, 4-5 mm in diam., with a truncate collar 1-1.5 mm long.

Only one subspecies in New South Wales:

*Amyema conspicuum* ssp. *conspicuum*. Illustration: Blakely in Proc. Linn. Soc. N.S.W. 48: t. 12, 13 (1923).

SYNONYMY: *Loranthus conspicuus* F. M. Bail. in Quensl. Agr. J. 26: 198 (1911); Blakely in Proc. Linn. Soc. N.S.W. 48: 147 (1923); *Loranthus betchei* Blakely in Proc. Linn. Soc. N.S.W. 48: 148 (1923); *Amyema betchei* (Blakely) Danser in Bull. Jard. Bot. Buitenz. 10: 294 (1929).

DISTRIBUTION: Far North Coast and Queensland northwards to Cooktown. Usually parasitic on *Alphitonia excelsa*.

Leaves dull on both sides, not dark-coloured; venation distinct. Chromosome number:  $n = 9$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 155 (1963)). Fl. Most of year; fr. Mar.

NORTH COAST: Ballina, Bäuerlen 12.1892 (35165, type of *Loranthus betchei* Blakely). Also in Queensland northwards to Cooktown.

8. *Amyema lucasii* (Blakely) *Danser* in Bull. Jard. Bot. Buitenz. 10: 296 (1929); Barlow in Austral. J. Bot. 14: 471 (1966).

SYNONYMY: *Loranthus lucasii* Blakely in Proc. Linn. Soc. N.S.W. 49: 80, t. 18 (1924).

DISTRIBUTION: Western and Far Western Plains, also in Queensland (from the Darling Downs to Central Queensland). Almost exclusively parasitic on *Flindersia maculosa* but also recorded on *Eremocitrus glauca*, *Grevillea striata* and "Melaleuca genistifolia" (probably mis-identified).

Glabrous except for the calyx and fruit densely white-tomentose in the lower part. *Leaf-lamina* usually glaucous, narrow oblong to elliptical, 3.5-5.5 x 1-2.5 cm, obtuse or rounded at the apex, distinctly wrinkled on both surfaces when dry, abruptly contracted at the base; petiole terete, 4-8 mm long. *Inflorescence* axillary; peduncle 12-20 mm long; rays usually 4, (2)-5-12 mm long; all flowers of the triads sessile; bracts concave, 1.5-2 mm long. *Calyx* cup-shaped; limb truncate, 1 mm long. *Corolla* in the mature bud slender, clavate, c. 20 mm long. *Anthers* 1.5-2 mm long; free part of the filament 6-8 mm long. *Fruit* ovoid, crowned by the persistent glabrous calyx limb. *Chromosome number*:  $n = 9$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 155 (1963)). Fl. Nov.-Jan.; fr. no information.

WESTERN PLAINS: 14 miles [22 km] SW. of Boggabilla, *Barlow* 51, 4.1960 (BRIU); 40-50 miles [64-80 km] NW. of Collarenebri, *Jackson* 11.1911 & 12.1911 (79917, syntype; 79918, lectotype); 12 miles [19 km] S. of Lightning Ridge, *Barlow* 55, 4.1960 (BRIU); Walgett and the Pilliga, *Burrow* 12.1917 (79919); Gongolgon road, Bourke, *McBarron* 18667, 11.1969 (130139); "Yarrawin" Station, Barwon R., *Froggatt* 12.1913 (79920); West Bogan district, *Bäuerlen* 2.1900 (79923); between "Nulty" and "Toorale", *Boorman* 9.1912 (35164; NT); Coolabah, *Musson* 7.1905 (79921); Nyngan, *Bäuerlen* 11.1899 (79922); Wittagoona near Cobar, *Abrahams* 1.1910 (79924); Ivanhoe, *MacGillivray* 12.1923 (35163; ADW 16497; ADW 17098). FAR WESTERN PLAINS: "Pelora", c. 60 miles [96 km] NW. of Louth, *Moore* 4733, 12.1966 (101575); Mt Hope, 3 miles [4.8 km] N. of White Cliffs, *Constable* 4594, 10.1963 (70799); near Wilcannia, *Bailey* 10.1938 (79925); Mt Murchison, N. of Wilcannia, *Dallachy & Goodwin* (MEL); Wilcannia road near Darling R., *MacGillivray* 12.1921 (80476; ADW 16498); Mt Koonenberry, *Beckler* 12.1860 (MEL); Menindee district, *Constable* 11.1947 (4967). Also in Queensland (from the Darling Downs to Central Queensland).

9. *Amyema gaudichaudii* (DC.) Tiegh. in Bull. Soc. Bot. France 42: 84 (1895); Beadle, Evans & Carolin, Handb. Vasc. Pl. Syd. Dist. & Blue Mts 310 (1963); Barlow in Austral. J. Bot. 14: 464 (1966).

SYNONYMY: *Loranthus gaudichaudii* DC., Prod. 4: 295 (1830); Blakely in Proc. Linn. Soc. N.S.W. 48: 138, t. 8 (1923); *Dendrophthoe gaudichaudii* (DC.) G. Don, Gen. Hist. 3: 419 (1834); *Loranthus pendulus* var. *parviflora* Benth., Fl. Austral. 3: 394 (1866) (in part).

DISTRIBUTION: This species has a disjunct distribution, occurring in the MacPherson Range (North Coast ranges) and in the Central Coast from Sydney to the Shoalhaven River. The northern area of the species extends to the western Darling Downs, Queensland. The hosts are *Melaleuca* spp., especially *M. decora* (rarely *Callistemon* spp.).

Young shoots, inflorescences and flowers shortly tomentose. *Leaf-lamina* lanceolate, 2-3-(4) cm x 2-5 mm, rounded at the apex, attenuate at the base; petiole obscure, 2-5 mm long. *Inflorescence* axillary; peduncle very slender, 8-12 mm long; rays 2 or 3, spreading, 4-6 mm long; pedicels of the lateral flowers of the triads 2-4 mm long; bracts narrow, acute, 1 mm long. *Calyx* cup-shaped; limb truncate, 0.2 mm long. *Corolla* in the mature bud slender, clavate, obtuse, 7-10 mm long, 4- or 5-merous. *Anthers* elliptical, 1 mm long; free part of the filament c. 2 mm long. *Fruit* globular, red, c. 4 mm in diam. *Chromosome number*:  $n = 9$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 155 (1963)). Fl. Sept.-Nov.; fr. Feb.-Mar.

NORTH COAST: Acacia Creek, *Dunn* 2.1909 (79716). CENTRAL COAST: between Kingswood and St Marys, *Boorman & Blakely* 9.1920 (79725); Rhodes, *Deane* 1883 (79717); Parramatta Park, *Fletcher* 12.1888 (79722); Parramatta, *Woolss* (MEL, syntype of *Loranthus pendulus* var. *parviflora* Benth.); Parramatta, *Deane* 9.1888 (79723); Parramatta R., Parramatta, *Blakely & Shires* 6.1919 (79724); Granville, *Gettens* 3.1919 (79721); Potts Bush, Homebush, *Power* 2.1921 (79718); Homebush, *Boorman* 11.1898 (79719); Flemington, *Fletcher* (79720); Chester Hill, *Constable* 11.1949 (11130); Chester Hill, *Blakely & Tate* 9.1926 (79742); between Canley Vale and Fairfield, *Blakely, Shires & Bott* 6.1918 (79727); Lakemba, Buckingham 10.1917 (79738); Canley Vale, *Shires* 11.1921 (79726); Bankstown, *Whiteacre*

3.1921 (79740); Bankstown, *Cambage* 1.1900 (79739); Georges R., Cabramatta, *Blakely*, *Shires* & *Bott* 6.1918 (79728); Dumbleton [now Beverly Hills], *Camfield* 11.1895 (79737); Hurstville, *Camfield* 12.1895 & 1.1896 (79736; 79735); near Hurstville, *Camfield* 11.1895 (80472); Penshurst, *Cheel* 11.1898 & 2.1899 (79734; 79733); Liverpool, *Boorman* 6.1918 (79729); Liverpool, *McBarron* 11.1998, 1.1966 (90187); Glenfield, near Georges R., *Blakely* & *Shires* 12.1918 (79730); Minto, *Staer* 11.1910 (79731); Thirlmere, *Everett* 4.1896 (79732). SOUTH COAST: Braidwood road, near Nowra, *Monahan* 3.1924 (89506). The northern area of the species extends to the western Darling Downs, Queensland.

**10. *Amyema miraculosum* (Miq.) Tiegh.** in Bull. Soc. Bot. France 42: 84 (1895); Barlow in Austral. J. Bot. 14: 476 (1966).

SYNONYMY: *Loranthus miraculosus* Miq. in Lehm., Pl. Prciss. 1: 281 (1844); *Blakely* in Proc. Linn. Soc. N.S.W. 48: 132 (1923); Ewart, Fl. Vict. 426 (1930); Blackall, How to Know W. Austral. Wildflowers 145 (1954); *Loranthus pendulus* var. *parviflorus* Benth., Fl. Austral. 3: 394 (1866) (in part); *Amyema apiculatum* Danser, Candollea 7: 242 (1937) (as "apiculata"). The preceding synonyms are referable to ssp. *miraculosum*. For further synonymy see under ssp. *boormanii*.

DISTRIBUTION: A species consisting of two subspecies, widely distributed in the drier parts of temperate Australia. The most usual host is *Santalum acuminatum* but many other hosts have been recorded, including *S. lanceolatum*, species of *Myoporaceae*, *Casuarina* spp. and other *Loranthaceae*.

Glabrous, or the calyx and rarely the young parts sparsely tomentose. *Leaf-lamina* lanceolate to oblong or spathulate, 2.5-7.5-(10) x (0.5)-1-2-(2.5) cm, acute to rounded at the apex, gradually attenuate to contracted at the base; petiole distinct or obscure, 0.2-1 cm long. *Inflorescence* axillary; peduncle (6)-10-20-(30) mm long; rays 2 or 3, 3-10 mm long; pedicels of the lateral flowers of the triads (0.5)-1.5-7-(10) mm long; bracts narrow, acute or truncate, 0.7-1.5 mm long. *Calyx* funnel-shaped; limb truncate, 0.5 mm long. *Corolla* in the mature bud 8-25 mm long, slender, strongly clavate and obtuse at the apex, longitudinally ridged or winged especially at the apex, sometimes 4-merous in the lateral flowers. *Anthers* 1-2 mm long; free part of the filament 2-4 times as long. *Fruit* narrow-ellipsoidal, constricted at the apex and crowned by the persistent calyx limb.

Only one subspecies occurs in New South Wales:

*Amyema miraculosum* ssp. *boormanii* (*Blakely*) Barlow in Austral. J. Bot. 14: 477 (1966).

SYNONYMY: *Loranthus bifurcatus* var. *queenslandicus* Domin in Bibl. Bot. 89: 55 (1921); *Loranthus miraculosus* var. *boormanii* Blakely in Proc. Linn. Soc. N.S.W. 48: 137, t. 7 (1923); Ewart, Fl. Vict. 426 (1930); Black, Fl. S. Austral. ed. 2: 278 (1948); *Loranthus miraculosus* var. *pubiger* Blakely in Proc. Linn. Soc. N.S.W. 48: 138 (1923) (as "pubigera").

DISTRIBUTION: Western Slopes, Western and Far Western Plains; also in Queensland, Northern Territory, Victoria, South Australia, and the Goldfields region of Western Australia, on *Santalum* and other hosts but not on *Eucalyptus*.

*Corolla* 15-25 mm long. *Leaf-lamina* lanceolate to narrow oblong, gradually attenuate at the base into an obscure petiole, 4-10 cm long. *Chromosome number*:  $n = 9$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 155 (1963)). Fl. Most of year; fr. Apr.-Aug.

NORTH WESTERN SLOPES: Moonbi, *Sampson* 5.1910 (89490); c. 12 miles [19 km] NE. of Ogunbil, *Blakely* 4.1927 (79748); 35 miles [56 km] E. of "Wangan" [Liverpool Plains district], *Cleland* 10.1918 (AD 96042056); Woolomin, 14 miles [22 km] N. of Nundle, *Blakely* 4.1927 (79747). CENTRAL WESTERN SLOPES: Wellington, *Bäuerlen* 1.1903 & 2.1903 (89491; 79749) Hervey Range, *Boorman* 11.1905 (79750); Parkes, *Plowman* 11.1902 (79752); Mt Bolton,

Moura, c. 10 miles [16 km] SW. of Bumbery, *Bäuerlen* 3.1901 (79751); Barmedman, *Dwyer* 4.1915 (79753); Temora, *Dwyer* 1004, 5.1918 (79754). SOUTH WESTERN SLOPES: Albury, *Dwyer* 7.1920 (79755). WESTERN PLAINS: c. 5 miles [8 km] SW. of Boggabilla, *Barlow* 50, 4.1960 (BRIU); between Barwon and Boomi Rivers, *Brennan* 2.1912 (79788); Bourke, *Boorman* 5.1918 (79796; 79797); West Bogan, *Bäuerlen* 2.1900 (79805); between "Nulty" and "Toorale", *Boorman* 9.1912 (79798); Narrabri, *Burrow* 1.1916 (79789; 79792; 79793); Narrabri, *Bäuerlen* 6.1901 (79790; 89493); Narrabri, *Boorman* 8.1907 (79791); Narrabri West, *Boorman* 6.1907 (89492); between Boggabri and Narrabri, *Jensen* 8.1911 (79794); Pilliga East State Forest, *Burrow* 5.1918 (79795); Pilliga, *Rupp* 12.1932 (35154); Wittagoona, 50 miles [80 km] NW. of Cobar, *Abrahams* 1.1910 (35153, NT, type of *Loranthus miraculosus* Miq. var. *boornianii* Blakely); 42 miles [67 km] from Cobar on Louth road, *Moore* 4792, 12.1966 (101573); Coolabah, *Bäuerlen* 1.1900 & 2.1900 (79800; 79799); Cobar, *Boorman* 7.1903 & 5.1916 & 5.1918 (79803; 36071; 79802); Cobar, *Cleland* 9.1911 (AD 96042055); Cobar, *Carne* 1.1906 (79801); watering tank, Cobar, *McBarron* 18455, 11.1969 (130140); 35 miles [56 km] W. of Cobar, *Abrahams* 6.1912 (79769, type of *Loranthus miraculosus* Miq. var. *pubigera* Blakely); Cobar district, *Abrahams* 1910-1911 (79804); Shuttleton near Nymagee, *Levitt* 1.1913 (79756); Gilgumnia, *Bäuerlen* 2.1904 (35162); Double Peak, *Bäuerlen* 3.1904 (79757); Mt Hope, *Bäuerlen* 4.1904 (79758); 11 miles [18 km] E. of Ivanhoe, *Whaite* 1389 (79759); Cargelligo via Condobolin, *Horan* 1.1913 (35161); Hillston, *Cheel* 3.1926 (79760); Goolgowi, *Johnson* 6.1952 (79761); Southwest plains below Narrandera, *Dwyer* 5.1922 (79762); "Zara", Wangaratta, *Officer* 5.1917 & 1.1922 & 1.1922 & 1.1922 (35159; 35160; 79763; 80473); "Zara" Station, via Deniliquin, *Burbridge* 1.1950 (69336); 34 miles [54 km] N. of Deniliquin, *Leigh* S408, 1.1966 (79764); between Thule Creek and Barham, *Johnson* 5.1955 (79765). FAR WESTERN PLAINS: "Ellerslie", 100 miles [160 km] NW. of Bourke, *Regan* 1.1962 (60464); Mt Wood via Tiboorbura, *Hitchcock* 8.1970 (131476); "Calindry" Station, c. 50 miles [80 km] ESE. of Milparinka, *Leigh* 203, 7.1968 (112262); Curranalpa, 20 miles [32 km] SW. of Louth, *Werner* 11.1969 (88183); Paldrumatta bore, SW. of Milparinka, *Corbett* 9.1904 (35158); Broken Hill, *Andrews* 9.1918 (79767); Broken Hill, *Morris* 3.1920 (79766); Broken Hill, *MacGillivray* (ADW 17101); Thaekaringa road, *Morris* 3.1920 (ADW 16503); 17 miles [27 km] W. of Broken Hill, *Morris* 5.1920 (79768). Also in Queensland, Northern Territory, Victoria, South Australia, and the Goldfields region of Western Australia.

**11. Amyema quandang (Lindl.) Tiegh.** in Bull. Soc. Bot. France 41: 507 (1894); Barlow in Austral. J. Bot. 14: 480 (1966).

SYNONYMY: See under the varieties.

MISAPPLIED NAME: For misapplications of this name see the note under *A. maidenii*.

DISTRIBUTION: Distributed somewhat discontinuously in temperate inland areas, exclusively parasitic on species of *Acacia* (most commonly *A. aneura* and *A. pendula* in N.S.W.).

*Whole plant* shortly and densely white-tomentose or the older vegetative parts glabrous and glaucous. *Leaves* opposite, alternate or scattered; lamina lanceolate to ovate, often falcate, (3)-5-10-(12) x 0.8-2-(4.5) cm, acute or rounded at the apex, attenuate to contracted at the base; petiole distinct, 0.4-1.2 cm long. *Inflorescence* axillary; peduncle (3)-5-8-(10) mm long; rays 2, 2-6-(8) mm long; pedicels of the lateral flowers of the triads spreading, 1-3 mm long; bracts inconspicuous, acute or rounded, 1 mm long. *Calyx* funnel-shaped in the lower part, abruptly expanded and then contracted in the upper part forming a rim just below the limb; limb truncate, 0.5-1 mm long. *Corolla* in the mature bud slender to robust, acute or obtuse, (16)-20-30 mm long. *Anthers* 2-4 mm long; free part of the filament c. 3 (rarely 5) mm long. *Fruit* ellipsoidal or slightly pear-shaped to nearly orbicular, 6-10 mm long.

The species is somewhat variable and material may be referred to two varieties:

1. Leaf-lamina lanceolate to elliptical, less than 2 cm wide, usually falcate, attenuate at the base ..... var. *quandang* a.
- 1.\* Leaf-lamina oblong to ovate, more than 2 cm wide, not falcate, contracted at the base ..... var. *bancroftii* b.

a. *Amyema quandang* var. *quandang*.

SYNONYMY: *Loranthus quandang* Lindl. in Mitchell, Three Exped. 2: 69 (1838); Benth., Fl. Austral. 3: 395 (1866); Moore & Betche, Handb. Fl. N.S.W. 228 (1893); F. M. Bail., Queensl. Fl. 5: 1381 (1902); Blakely in Proc. Linn. Soc. N.S.W. 49: 82, t. 19 (1924); Ewart, Fl. Vict. 425 (1930); Black, Fl. S. Austral. ed. 2: 278 (1948). *Loranthus nutans* A. Cunn. ex Hook. in Mitchell, J. Exped. Trop. Austral. 158 (1848), nom. illegit., non Spreng. (1825); *Loranthus cunninghamii* A. Gray, U.S. Expl. Exped. 1: 741 (1854); *Loranthus canus* F. Muell. in Hook., Kew J. 8: 145 (1856); *Dendrophthoe pruinosa* Ettingsh. in Denks. Akad. Wiss. Math.-Nat. (Wien) 32: 65 (1872); *Loranthus pendulus* var. *canescens* F. Muell. & Tate in Trans. Roy. Soc. S. Austral. 16: 360 (1896); *Amyema cana* (F. Muell.) Tiegh. in Bull. Soc. Bot. France 42: 84 (1895); *A. nutans* (A. Cunn. ex Hook.) Tiegh., l.c., nom. illegit.; *A. pruinosa* (Ettingsh.) Tiegh., l.c.

DISTRIBUTION: North and Central Western Slopes, Western and Far Western Plains, and rarely in valleys of the Northern Tablelands and extreme southwest of the North Coast; further distributed throughout the range of the species. Parasitic on several species of *Acacia*.

Leaf lamina lanceolate to elliptical, usually falcate, (3)-5-10 x 0.8-2 cm, attenuate at the base. Chromosome number:  $n = 9$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 155 (1963)). Fl. Jan.-Oct.; fr. Dec.-Apr.

NORTH COAST: Fordwick, Bulga, SW. of Singleton, *Foster* 1419, 9.1953 (79976). CENTRAL COAST: Hunter's R., *Cunningham* 25, 4.1825 (79975, holotype of *Loranthus nutans* A. Cunn. ex Hook.). NORTHERN TABLELANDS: Wollomombi Gorge, 25 miles [40 km] E. of Armidale, *McKie* 344 & 345, 1.1930 (79968; 89485). SOUTHERN TABLELANDS: Byadbo Range, e. 25 miles [40 km] W. of Delegate, near Snowy R., *Costin* 8.1949 (79969). NORTH WESTERN SLOPES: Boggabri, *Cambage* 3591, 10.1912 (89484); Mt Terrible near Currabubula, *Cambage* 3577, 8.1912 (79981); Mt Terrible near Currabubula, *Johnson* 10.1951 (17905); Warrumbungle Ranges, *Forsyth* 10.1901 (79982); Coonabarabran, *Jensen* 10.1906 (88187). CENTRAL WESTERN SLOPES: Gilgandra, *Cambage* 1136, 10.1904 (79983); between Bengala and Cassilis, *Leichhardt* (79970); Scone, *Froggatt* 5, 9.1921 (79974); Owens Gap, W. of Scone, *Cambage* 1681, 8.1907 (79973); Junction of Honeysuckle and Murrumbo Creeks, W. of Kerrabee, *Johnson* 4.1953 (79972); Tal Tal Mtn., Upper Bylong, *Johnson* 10.1951 (17920); 19 miles [30 km] from Wollar on the Muswellbrook road via Bylong, *Story* 6859, 10.1959 (79971; CANB 72666); Moolarben Creek between Cooyal and Wollar, *Johnson* & *Constable* 8.1950 (14524); Mudgee South, *Tindale* 10.1953 (79984); Rylstone, *Gordon* 8.1953 (AD 96103170); between Condobolin and Borambil, *Maiden* 8.1897 (79986); e. 2 miles [3.2 km] from Condobolin on Forbes road, *Johnson* 724, 9.1946 (80002); Fields Plains, Lachlan R. [E. of Condobolin], *Cunningham* 136, 5.1817 (K, holotype of *Loranthus nutans* A. Cunn. ex Hook.); BM; photo in AD; drawing in NSW 112260); Parkes, *Plowman* 11.1902 (79985); Cowabbie, 10 miles [16 km] N. of Matong, *Maiden* 8.1883 (79987). WESTERN PLAINS: 27 miles [43 km] NW. of Collarenebri, *Barlow* 54, 4.1960 (BRU); "Brookesville" via Enngonia, *Stafford* 8.1963 (87865); Bourke, *Maiden* 8.1896 (89486); Burren Junction, *Boorman* 6.1907 (89488); Narrabri, *Maiden* 11.1899 (79988); Narrabri, *Cleland* 11.1916 (79989); 21 miles [34 km] NW. of Cobar on Louth road *Moore* 4250, 9.1966 (101574); Quambone, *Chippendale* & *Constable* 5.1951 (19583); "Mt Harris" Station, NE. of Nyngan, *Constable* 4.1952 (20391); "Mt Harris", 50-70 miles [80-112 km] N. of Warren, *Boorman* 8.1908 (79990); c. 50 miles [80 km] S. of Bourke, *Carne* 9.1908 (79977); Cobar, *Abrahams* 12.1909 (79979); Nyngan, *Chisholm* 6.1922 (79991); Nevertire, *Froggatt* 7.1910 (79992); Nymagee, *Cambage* 216, 10.1900 (79980); Parish of Murda, e. 8 miles [13 km] from Condobolin on Melrose road, *per Garling* 12.1915 (80004); Condobolin, *Ford* 9.1946 (80003); 10 miles [16 km] E. of Ivanhoe, *Whaite* 1391, 4.1953 (80005); between Ivanhoe and Conoble, *Johnson* 5.1955 (43754; NT); Cargelligo via Condobolin, *Horan* 1.1913 (80001); "Wooyeo" Station, Lake Cargelligo, *Home* (80000); Lake Cudgellie (Cargelligo), *Boorman* 10.1906 (88184); Lachlan R., e. 30 miles [48 km] NW. of Hay, *Mitchell* 5.1835 (CGE, photo in CANB, drawing in NSW 79999); Yenda near Griffith, *Dwyer* 5.1920 (79998); Griffith, *Blakely* & *Shires* 7.1928 (79997); Griffith, *Shires* 8.1924 (79996); Leeton, *O'Hara* 8.1918 (79995); near Yaneo, *Cleland* 10.1912 (AD 96103195); "Zara", near Wangaralla, *Officer* 10.1917 & 1.1922 (79994; 80477); Moama, Lyndon, *Smith* 11.1902 (79993). FAR WESTERN PLAINS: 14 miles [22 km] SW. of White Cliffs, *Carne* 4.1904 (80010); 11 miles [18 km] WSW. of Wileannia on Barrier Highway, *Briggs* 2730, 5.1969 (88092); 40 miles [64 km] E. of Broken Hill, *Cleland* 4.1917 (80007); 60 miles [96 km] E. of Broken Hill, *Pidgeon* & *Vickery* 8.1939 (80006); *Darling* R., *Dixon* (AD 96042077). Further distributed throughout the range of the species.

b. *Amyema quandang* var. *bancroftii* (F. M. Bail.) Barlow in Austral. J. Bot. 14: 481 (1966).

SYNONYMY: *Loranthus quandang* var. *bancroftii* F. M. Bail. in Queensl. Agr. J. 29: 180 (1912); Blakely in Proe. Linn. Soc. N.S.W. 49: 85, t. 19 (1924).

DISTRIBUTION: Northern half of Western and Far Western Plains, also in Queensland, on various *Acacia* spp.

*Leaf-lamina* oblong to ovate, widest below the middle, (5)–7–12 x (2)–3–4·5 cm, usually undulate at the margin, 5-nerved, abruptly constricted into the petiole. Chromosome number:  $n = 9$  (Barlow in Proe. Linn. Soc. N.S.W. 88: 155 (1963)) Fl. Mar.-Aug.; fr. Apr.

WESTERN PLAINS: Byrock district, *Deane* 3.1899 (89487); Coolabah, *Boorman* 6.1901 (79978); Warren-Coonamble road, *Deane* 6.1896 (89489); 33 miles [53 km] W. of Nyngan, *Campbell* 0117, 6.1949 (69335). FAR WESTERN PLAINS: Wanaaring district, *Johnson* 547/169, 6.1947 (5083); Fowlers Gap, 70 miles [112 km] N. of Broken Hill, *Beadle* 8.1955 (80011); 56 miles [90 km] from Broken Hill on Wilcannia road, *Rodd* 8.1969 (88164); Broken Hill, *Morris* 7.1918 & 4.1920 & 12.1920 (80009; 80008; AD 96103032). Also in Queensland.

The present author incorrectly cited authorship of this variety as *A. quandang* var. *bancroftii* (Blakely) Barlow in Austral. J. Bot. 14: 481 (1966).

The following collection appears to be an intergrade between var. *bancroftii* and var. *quandang*:

WESTERN PLAINS: 2 miles [3·2 km] NNW. of Boggabri, *Covency* 2295, 10.1969 (88172).

12. *Amyema congener* (Sieber ex Schult. & Schult. f.) Tiegh. in Bull. Soc. Bot. France 41: 507 (1894); Beadle, Evans & Carolin, Handb. Vasc. Pl. Syd. Dist. & Blue Mts 310 (1963); Barlow in Austral. J. Bot. 14: 461 (1966).

SYNONYMY: See under the subspecies.

NOMENCLATURAL NOTE: Bentham, Fl. Austral. 3: 394 (1866) included *A. congener* in *Loranthus pendulus* and was followed by Moore & Betsche, Handb. Fl. N.S.W. 228 (1893) and by F. M. Bail., Queensl. Fl. 5: 1380 (1902).

DISTRIBUTION: North Queensland to southern New South Wales.

Glabrous except for the young vegetative parts and the calyx sparsely to densely brown- or white-tomentose and sometimes the inflorescence and corolla sparsely tomentose. *Leaf-lamina* lanceolate or oblanceolate to nearly orbicular, 3–10 x 1–4–(5·5) cm, rounded or obtuse at the apex, attenuate or constricted at the base; petiole obscure or distinct, up to 0·8 cm long. *Inflorescence* axillary; peduncle straight, (10)–15–35 mm long; rays 3–5 (usually 4), 5–8 mm long; pedicels of the lateral flowers of the triads spreading, 2–3 mm long; bracts erect, usually acute, 1 mm long. *Calyx* slightly funnel-shaped; limb entire or irregularly split, 0·7–1 mm long. *Corolla* in the mature bud slender, elevata, acute, (16)–20–35 mm long. *Anthers* 2–3 mm long; free part of the filament 6–8 mm long. *Fruit* ellipsoidal to nearly globular, crowned by the persistent calyx limb.

Two subspecies are recognizable:

1. *Lamina* lanceolate to oblong, attenuate at the base, usually more than 4 cm long ..... ssp. *congener* a.
- 1.\* *Lamina* oblong to nearly orbicular, abruptly contracted at the base, 2·5–5 cm long ..... ssp. *rotundifolium* b.
  - a. *Amyema congener* ssp. *congener*. Illustration: Blakely in Proe. Linn. Soc. N.S.W. 47: t. 47 (1922).

SYNONYMY: *Loranthus congener* Sieber ex Schult. & Schult. f., Syst. 7, (1): 114 (1829); Blakely in Proc. Linn. Soc. N.S.W. 47: 409 (1922); *Dendrophthoe congener* (Sieber ex Schult. & Schult. f.) Mart. in Flora 13: 110 (1830); *Loranthus pendulus* var. *congener* (Sieber ex Schult. & Schult. f.) Domin in Bibl. Bot. 49: 54 (1921).

DISTRIBUTION: Coast (including ranges) and rarely Central Western Slopes (Hunter Valley), also in Queensland, northwards to the Atherton Tableland. Commonly parasitic on *Casuarina littoralis* and *Acacia* spp. but recorded on a wide range of other hosts.

Distinguishing characters are as set out in the key. Chromosome number:  $n = 9$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 155 (1963)). Fl. Most of year; fr. Jan.-May.

NORTH COAST: Burringbar, 13 miles [21 km] S. of Murwillumbah, *Barlow* 669, 10.1963 (BRIU); between Koreelah and Legume, *Barlow* 674, 10.1963 (BRIU); 17 miles [27 km] E. of Tenterfield, *Jessup & Gray* 12.1951 (89472); Stockyard Creek, Coaldale road near Clarence R., *Boorman* 10.1909 (79687); Pacific Highway, 8 miles [13 km] S. of Urunga, *Covey* 2155, 9.1969 (88158); Macleay R., Trial Bay, *Sydenham* 12.1917 (79694); Crescent Head, *Davis* 10.1941 (89518); Hastings R., *Beekler* (79695); Bulahdelah, *Rupp* 13, 10.1923 (79697); Cessnock, *Hamilton* 7.1910 (79700). CENTRAL COAST: Hawkesbury R., *Blakely & Shiress* 1.1918 (79763-79768); Hawkesbury R. at Peats Ferry, *Deane* 10.1883 (79672); Hawkesbury R., *Blakely* 3.1918 (79671); 24 mile [38 km] post near Cowan [Railway] Station, *Blakely & Shiress* 1.1918 (79670); Cowan Creek, Cowan, *Blakely & Shiress* 3.1918 (79668; 79669); Berowra Creek near punt, *Blakely* 3.1918 (79667); Newport, *Maiden & Cambage* 7.1905 (35842); Bobbin Head, *Blakely* 6.1917 (79663); St Ives near school, *Blakely, Shiress & Bott* 4.1918 (79666); Pymble, *Blakely* 1.1918 (79664; 79665); between Pymble and Gordon, *Blakely* 8.1917 (79662); Gordon, *McEbold* 5.1933 (AD 95633050); Gordon near [Railway] Station, *Blakely* 1.1918 (79661); Killara, *May* 5.1935 (79660); Lane Cove R. at Killara, *Blakely* 4.1918 (79659); The Spit, *Blakely & Boorman* 8.1918 (35841; 79656); Willoughby, *Hack* 9.1902 (79658); Lane Cove, *Hindwood* 12.1944 (80470); near Lane Cove bridge, *Blakely* 8.1917 (35840); below Lane Cove bridge, *Blakely* 8.1917 (79657); Mosman, *Dwyer* 3.1922 (79655); Ryde, *Deane* 10.1884 (79654); Meadowbank, *Blakely* 12.1917, 12.1917 & 1.1918 (79652; 79653; 79651); Ermington, *Baneroff* 8.1909 (79650); Parramatta R. at Ermington, *Blakely & Shiress* 6.1919 (79649); Rydalmere, *Cleland* 11.1909 (AD 96042080); Parramatta R. at Parramatta, *Blakely & Shiress* 6.1919 (79647; 79648); Port Jackson district, *Camfield* 2.1897 (79646); Nielsen Park, Vaucluse, *Blakely* 2.1918 (79643; 79644; 79645); The Domain, Sydney, *Camfield* 7.1896 (79642); The Domain, Sydney, *Maiden* 10.1920 (79641); Botanic Gardens, Sydney, *Camfield* 10.1895 & 10.1895 & 2.1897 (79637; 79636; 79638); Botanic Gardens, Sydney, *Mitchell* 6.1917 (79640); Botanic Gardens, Sydney, *Malthouse* 4.1917 (79639); Kogarah, *Camfield* 11.1899 (79629); Carr's Paddock, Carlton, *Blakely* 3.1918 (79630-79632); Como, *Betele* 5.1892 (35843); Sutherland, *Boorman* 10.1918 (79633); National Park, *Trescott* 8.1904 (79634); Mt Kembla, *Hamilton* 1900 (79635). SOUTH COAST: Shoalhaven R., E. of Bungonia, *Rodway* 4.1945 (89690); Shoalhaven R. canyon, E. of Bungonia, *Cole* 12.1947 (89681); foot of Mt Dromedary, Tilba Tilba, *Johnson & Constable* 9.1960 (52319); Bermagui, *Dunn* 7.1917 (89478); Merimbula, *Briggs* 12.1921 (89466). CENTRAL WESTERN SLOPES: between Bengala and Cassilis, *Leichhardt* (89470). Also in Queensland, northwards to the Atherton Tableland.

b. *Amyema congener* ssp. *rotundifolium* *Barlow* in Austral. J. Bot. 14: 462 (1966).

DISTRIBUTION: From Townsville to the Darling Downs and Maranoa districts, Queensland, and as intermediates on the North Coast of New South Wales (see below). Intermediate individuals are also found in Queensland, as far north as the Northern Darling Downs. Commonly parasitic on *Geijera parviflora* but also recorded on other hosts.

Distinguishing characters are set out in the key. Chromosome number:  $n = 9$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 155 (1963)). Fl. Feb.-Oct.; fr. no information.

*A. congener* ssp. *rotundifolium* represents the extreme of a cline in leaf characters which occurs in northern New South Wales and the eastern Darling Downs of Queensland, with an associated change in host preference to *Geijera parviflora*. Although no specimens typical of the subspecies have been recorded from New South Wales, many specimens intermediate between the two subspecies have been collected on the North Coast south to Newcastle:

NORTH COAST: Murwillumbah, *Halliday* 7.1938 (79679); Casino, *Irby* 8.1917 (79680); Goat Is., Richmond R., *Checl* 9.1916 (79682); Pikapene State Forest, c. 12 miles [19 km] SE. of Tabulam, *Haycs*, *Turner* & *McGillivray* 2661, 11.1966 (97379); near Royal Camp State Forest, c. 15 miles [24 km] SW. of Casino, *Turner* 10.1955 (79683); Coraki, *Maiden* & *Boorman* 11.1903 (79681); Harwood Is., Clarence R., *Helms* 2.1922 (79684; 79685); Coal Ridge, 19 miles [16 km] N. of Ramornie, *Blakely* & *Shireess* 7.1922 (79686); Copmanhurst, *Blakely* & *Shireess* 7.1922 (79689); Clarence R., c. 2 miles [3.2 km] below Copmanhurst, *Blakely* & *Shireess* 9.1922 (79690); Mt Mulligan, 4 miles [6.4 km] E. of Ramornie, *Blakely* & *Shireess* 7.1922 (79688); between Ramornie and Orara R. near meatworks, *Blakely* & *Shireess* 7.1922 (79691); Coramba, 11 miles [18 km] NW. of Coffs Harbour, *Tomlins* 1909 (79692); Dorrigo, *Heron* 10.1910 (79693); Copeland via Gloucester, *Gilbert* 11.1946 (79696); Forster, *Johnson* 10.1953 (26282); 3 miles [4.8 km] S. of Stroud, *Melville* 782 & *Mair*, 9.1952 (64800); Ash Is., Hunter R., *Maiden* 10.1903 (79698); Newcastle, *Leichhardt* 11.1842 (79699). NORTHERN TABLELANDS: Guyra-Tingha road, 9 miles [14 km] from Tingha, *Blakely*, *McKie* & *Bowman* 11.1929 (89468); junction of Inverell and Guyra roads, *Blakely*, *McKie* & *Bowman* 11.1929 (89467); Guyra district, *McKie* 5.1929 (89469). Intermediate individuals are also found in Queensland, to the northern Darling Downs.

13. *Amyema pendulum* (Sieber ex Spreng.) Tiegh. in Bull. Soc. Bot. France 41: 507 (1894); Beadle, Evans & Carolin, Handb. Vasc. Pl. Syd. Dist. & Blue Mts 311 (1963); Barlow in Austral. J. Bot. 14: 478 (1966).

SYNONYMY: See under the subspecies.

NOMENCLATURAL NOTE: Bentham, etc. had a broad concept of *Loranthus pendulus*, in which they included *A. miquelianum* and *A. congener*.

DISTRIBUTION: Southeastern Australia, parasitic on many species of *Eucalyptus* and also common on *Acacia* spp.

Glabrous except for the young shoots, inflorescences and flowers scurfy or shortly brown-tomentose. *Leaf-lamina* lanceolate, 10-20-(40) x (0.3)-0.7-1.5 cm, usually acute at the apex, gradually attenuate at the base; petiole 1-2-(4) cm long. *Inflorescence* axillary; peduncle robust, (8)-15-25-(40) mm long, rays 3-4-(5), spreading, 5-10-(18) mm long, flowers in tetrads or triads; pedicels of the lateral flowers spreading, 2-7 mm long; bracts concave, usually acute, 2-3 mm long. *Calyx* funnel-shaped, more or less contracted at the apex; limb minutely irregular or truncate, 1-1.5 mm long. *Corolla* in the mature bud (22)-28-35-(40) mm long. *Fruit* ellipsoidal-ovoid, 10 x 5 mm, crowned by the persistent calyx limb.

Two subspecies are recognizable:

1. Attachment usually ball-like. Buds usually acute, 5-merous. Peduncle usually 10-22 mm long; rays 5-11 mm long; pedicels 2-4 mm long. Anther 2-4 mm long, about  $\frac{1}{3}$  length of the free part of the filament ..... ssp. *pendulum* a.
- 1.\* Attachment usually with longitudinal strands under the host bark. Buds usually obtuse, 5- to 8- (usually 6-) merous. Peduncle usually 15-40 mm long; rays 8-18 mm long; pedicels 4-7 mm long. Anther 5-9 mm long, about equal to the free part of the filament ..... ssp. *longifolium* b.

a. *Amyema pendulum* ssp. *pendulum*. Illustration: Blakely in Proc. Linn. Soc. N.S.W. 47: t. 46 (1922).

SYNONYMY: *Loranthus pendulus* Sieber ex Spreng., Cur. Post. 139 (1827); Bentham, Fl. Austral. 3: 394 (1866), in part; Moore & Betche, Handb. Fl. N.S.W. 228 (1893), in part; F. M. Bail., Queensl. Fl. 5: 1380 (1902), in part; Blakely in Proc. Linn. Soc. N.S.W. 47: 407 (1922); Ewart, Fl. Vict. 426 (1931); Black, Fl. S. Austral. ed. 2, 278 (1948); *Dendrophthoe pendula* (Sieber ex Spreng.) G. Don, Gen. Hist. 3: 491 (1834).

DISTRIBUTION: Coast, Tablelands and Western Slopes from New England southwards, but apparently absent from most of the North Coast. Also in Victoria and the southeast of South Australia. It may be expected in the border regions of southeastern Queensland.

Distinguishing characters are as set out in the key. Chromosome number:  $n = 9$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 155 (1963)). Fl. Most of year; fr. Apr.-June; Nov.-Dec.

NORTH COAST: Wylie Creek, c. 12 miles [19 km] NE. of Wilsons Downfall, *Gray* 1.1956 (79599); Cessnock, *Hamilton* 7.1910 (79550). CENTRAL COAST: Mangrove Road near Gosford, *Fletcher* 9.1888 (79551); 1 mile [1.6 km] N. of Colo Heights, *Tindale* 6.1960 (51289); 12 miles [19 km] S. of Wisemans Ferry, *Barlow* 69, 5.1960 (BRIU 74); Kurrajong Heights, *Cambridge* 1232, 8.1905 (79552); 1 mile [1.6 km] W. of Berowra, *Blakely & Shiress* 8.1919 (79553); Cockle Creek near Hornsby, *Blakely* 6.1919 (79548); Hornsby, *Blakely* 4.1917 & 4.1917 & 6.1917 & 8.1917 & 8.1917 (79543); 36062; 79544; 79545; 79546; 79547; Linden, on main road  $\frac{1}{2}$  mile [0.8 km] from [Railway] Station towards Woodford, *Blakely & Shiress* 5.1921 (79554); Port Jackson, *Sieber* 241 (K, holotype, photo in AD; BM; G, photo in AD; MEL); Fairfield, near [Railway] Station, *Blakely, Shiress & Bott* 6.1918 (79542); Cabramatta, Georges R., *Blakely, Shiress & Bott* 6.1918 (79541); near Liverpool, *Blakely & Shiress* 12.1918 (79539); Liverpool, *Blakely & Shiress* 12.1918 (79538; 79540); Georges R. at Glenfield, *Blakely & Shiress* 12.1918 (79537); between Camden and Parramatta, *Leichhardt* (79536); Camden, *Chisholm* 8.1918 (79535); Waterfall, *Deane* 1150, 9.1888 (79533); Picton, *Everitt* 11.1902 (79534); Nattai R., (near Hill Top), *Shiress & Cheel* 9.1918 (79571). SOUTH COAST: Conjola near Milton, *Hadley* 5.1938 (89501); Bendethera, *Rodway* 9.1941 (89502); Mt Dromedary, *Reader* 8.1880 (79532); 6 miles [10 km] from Bermagui, *Dunn* 10.1917 (79531); halfway up Wapengo Range, c. 15 miles [24 km] S. of Bermagui, *Dunn* 11.1917 (79530); Towamba road, Eden, *Cheel* 12.1903 (79529); East Boyd and Toorago Point, *Mossman* 294 (BRI). NORTHERN TABLELANDS: Glen Innes, *Helms* 2.1922 (79600); Glen Innes, *Boorman* 3.1917 (34987); Guyra-Tingha road, 9 miles [14 km] from Tingha, *Blakely, McKie & Bowman* 11.1929 (79522); 5 miles [8 km] W. of Llangothlin, *McKie* 4.1928 (79601); Backwater, NE. of Guyra, *Jessup & Gray* 8.1952 (79602); Guyra, *McKie* 4.1928 (79603); 13½ miles [22 km] E. of Guyra to Aberfoyle road, *McKie* 4.1928 (79604); 6 miles [10 km] SW. of Guyra, *McKie* 4.1928 (79605); 6 miles [10 km] S. of Guyra, *McKie* 2.1928 (34988); 11 miles [18 km] N. of Armidale, *McKie* 9.1930 (34989); Mt Duval, Armidale, *Smith* 6.1955 (79606); Armidale, *Davis* 6.1940 (89511); Wollomombi, *McKie* 1.1930 (79607); Yarrowitch, *Maiden* 11.1897 (79608); Kangaroo Tops, Tomalla Plateau, *McDonald* 9.1954 (79609). CENTRAL TABLELANDS: Mt Vincent near Ilford, *Baker* 11.1892 (79622); Hill End, *Cambridge* 2777, 7.1911 (79623); 14 miles [22 km] W. of Bathurst, *Barlow* 215, 12.1960 (BRIU 75); Marrangaroo, *Blakely & Chisholm* 5.1922 (79610; 79611); Mt Wilson, *Gregson* 1.1899 (79612); near Blayney, *Meek* 11.1919 (79626; 79627); S. of Mt Wilson, *Jahusan* 9.1949 (79613); c. 1 mile [1.6 km] N. of Hartley Vale, *Blakely* 6.1921 (79614); Mt Victoria, *Maiden & Cambridge* 1.1905 (79615); Blue Mts, *Deane* 9.1884 (79619); Gordon Falls, Katoomba, *Blakely* 11.1932 (79616); Wentworth Falls, *Blakely & Shiress* 5.1921 (79617); Wentworth Falls near Golf Links, *Bott* 12.1918 (79618); Trunkey Creek, c. 25 miles [40 km] S. of Blayney, *Baerman* 11.1918 (79628); Jenolan Caves district, *Blakely* 8.1899 & 10.1899 (79621; 79620); Ruby Creek, Mt Werong, *Jahnsan & Constable* 10.1951 (17757); Hill Top, *Cheel* 7.1917 (79573); Hill Top, *Wintley* 6.1951 (79572); Colo Vale, *Shiress & Cheel* 9.1918 (79570); Mittagong, *Dunn* 3.1919 (79569); Bowral, *Tindale* 5.1946 (79568); between Bowral and Welby, *Strugnell* 3.1955 (79567); Berrima, *Maiden* 9.1901 (79566); Bundanoon, *Tindale* 4.1947 (3403); Wingello, *Boorman* 12.1921 (34991). SOUTHERN TABLELANDS: Bungendore, *Bäuerlen* 6.1898 (34990); Canberra, *Cambridge* 3092, 11.1911 (79562); Burbong, A.C.T., *McKee* 11433, 4.1964 (68612); Queanbeyan, *Cambridge* 3360, 12.1911 (79564); Bungendore Hill, Queanbeyan, *Jahnsan* 12.1950 (79563); 1 mile [1.6 km] from Batlow on Tumbarumba road, *Breading* 3.1920 (79557; 79558); Creek near Punchbowl Creek, Booroomba, A.C.T., *Burbridge* 11.1960 (79561); Talbingo, *de Beuzeville* 9.1919 (79556); 1 mile [1.6 km] S. of Gudgenby Ford, A.C.T., *Darbyshire* 125, 1.1951 (79559); 10 miles [16 km] S. of Tumbarumba, *Dwyer* 12.1921 (79555). NORTH WESTERN SLOPES: Coonabarabran, *Meek* 10.1919 (79523). CENTRAL WESTERN SLOPES: Wybong Creek, Kars Springs, c. 23 miles [37 km] WNW. of Scone, *Pickard & Caveny* 1230, 6.1969 (88088); Mt Bolton, Moura, c. 10 miles [16 km] SW. of Bumberry, *Bäuerlen* 3.1901 (79524); Bowan Park, E. of Cudal, *Blakely* 10.1906 (79624; 79625); Lachlan R., *Betche* (79525). SOUTH WESTERN SLOPES: Bowning Hill, *Cambridge* 2214, 8.1909 (79526); Burrinjuck, *Cheel* 1.1912 (79527); Mullengandra, *McBarron* 3247, 4.1949 (79528). Also in Victoria and the southeast of South Australia. It may be expected in the border regions of southeastern Queensland.

b. *Amyema pendulum* ssp. *longifolium* (Hook.) Barlow in Austral. J. Bot. 14: 479 (1966).

SYNONYMY: *Loranthus longifolius* Hook., Ic. Pl. 9: t. 880 (1852); *Amyema longifolium* (Hook.) Tiegh. in Bull. Soc. Bot. France 42: 84 (1895).

DISTRIBUTION: Far North Coast and ranges, Central Western Slopes and nearer Western Plains, also in Queensland, to Wide Bay. Parasitic, especially in the west, on *Eucalyptus camaldulensis*.

Distinguishing characters are as set out in the key. Fl. Jan.-Feb.; fr. May-July.

NORTH COAST: Between Koreelah Peak and White Swamp, *Maiden* 12.1907 (79549); *Clarence R.* (MEL); Mt Mulligan, 4 miles [6.4 km] E. of Ramornie, *Blakely & Shirress* 7.1922 (79576); Mt Harriet, Ramornie, *Blakely & Shirress* 7.1922 (79575). CENTRAL WESTERN SLOPES: Wellington, *Bäuerlen* 2.1903 (79584); Eugowra, *Cambage* 1.1900 (79574). WESTERN PLAINS: Moree, *Helms* 2.1922 (79586); Bourke near ferry, *Boorman* 5.1918 (79585); Lake Cargelligo via Condobolin, *Horan* 1.1913 (34984); Hillston, *Johnson* 547/29, 5.1947 (6052). Also in Queensland, to Wide Bay.

## 6. DIPLATIA Tiegh.

*Inflorescence* capitate, consisting of 2 (rarely 3) sessile dichasia (triads) at the apex of an axillary common peduncle; central bracts of the triads enlarged and foliaceous, oblong to ovate, enclosing the flowers and connate at the margins over them during development; lateral bracts small, narrow, deciduous. *Corolla* 5-merous, regular, with free petals. *Anthers* basifix, immobile. *Style* articulate at the base. *Aerial sten-parasitic shrubs* without runners; attachment with extensive longitudinal haustorial strands in the host cambium; leaves opposite, curvinerved.

A highly specialized genus of three species, endemic to Australia and occurring mostly in the north-eastern part of the continent. Only one species occurs in New South Wales.

*Diplatia grandibractea* (F. Muell.) Tiegh. in Bull. Soc. Bot. France 41: 501 (1894); Barlow in Austral. J. Bot. 14: 488 (1966).

SYNONYMY: *Loranthus grandibracteatus* F. Muell., Rept. Burdek. Exped. 14 (1860); Benth., Fl. Austral. 3: 395 (1866); Moore & Betche, Handb. Fl. N.S.W. 228 (1893); F. M. Bail., Queensl. Fl. 5: 1381 (1902); Blakely in Proc. Linn. Soc. N.S.W. 49: 90, t. 23 (1924); Black, Fl. S. Austral. ed. 2: 279 (1948); [*Loranthus tenuifolius* and *Diplatia tenuifolia* Tiegh. in Bull. Soc. Bot. France 42: 83, 87 (1895) nomina nuda].

DISTRIBUTION: Northern half of Western and Far Western Plains, also in far northeastern South Australia, Northern Territory and Queensland. Usually parasitic on *Eucalyptus* spp. of the "Box" group, especially *E. microtheca* ("Coolabah").

Glabrous. *Leaf-lamina* lanceolate to oblong, 6-12 x 0.5-2 cm, rounded at the apex, very gradually attenuate at the base; petiole terete, (0.5)-1-1.8 cm long. *Inflorescence* solitary in the axil; peduncle 17-25-(35) mm long, dorsiventrally flattened, 6-8 mm wide at the apex, undivided; triads 2 (rarely 3), sessile; central bracts (28)-35-45 x 15-22 mm; lateral bracts usually slightly longer than the calyx. *Calyx* funnel-shaped; limb thin, irregular, 0.7 mm long. *Corolla* in the mature bud 25-32 mm long. *Anthers* 2.5-3 mm long; free part of the filament c. 3 mm long. *Fruit* ellipsoidal, truncate, up to 8 mm long. *Chromosome number*:  $n = 9$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 155 (1963)). Fl. no information; fr. no information.

WESTERN PLAINS: 9 miles [14 km] SW. of Lightning Ridge, *Barlow* 56, 4.1960 (BRIU); Bourke, *Boorman* 5.1918 (80085); between "Nulty" and "Toorale", *Boorman* 9.1912 (33653); Girilambone, *Bäuerlen* 3.1900 (75082); Girilambone, *Boorman* 6.1901 (80084; MEL). FAR WESTERN PLAINS: Grey Range, 25 miles [40 km] from Queensland, *Bäuerlen* 322, 1887 (MEL); Mt Murchison, N. of Wilcannia (MEL). Also in far northeastern South Australia, Northern Territory and Queensland.

## 7. DENDROPHTHOE Mart.

*Inflorescence* a simple axillary raceme or spike (sometimes reduced\* to a simple 2-flowered umbel or to a single axillary flower); bracts single under each flower. *Corolla* with united segments, 5-microus; tube usually inflated, curved and unequally split into lobes. *Anthers* basifix, immobile, 4-locular; pollen trilobate. *Aerial stem-parasites*; runners usually present; leaves alternate or scattered (less frequently opposite) with pinnate venation.

A genus of about 30 species distributed from tropical Africa to Australia, with the largest centre of development in western Malaysia. Specific limits are generally difficult to distinguish. Of the seven Australian species two occur in New South Wales.

1. Calyx glabrous ..... *D. glabrescens* 1.
- 1.\* Calyx shortly brown-tomentose ..... *D. vitellina* 2.

**1. *Dendrophthoe glabrescens* (Blakely) Barlow** in Proc. Linn. Soc. N.S.W. 87: 55 (1962), and in Austral. J. Bot. 14: 492 (1966).

**SYNONYMY:** *Loranthus longiflorus* var. *savannorum* Domin in Bibl. Bot. 89: 52 (1921); *Loranthus vitellinus* var. *glabrescens* Blakely in Proc. Linn. Soc. N.S.W. 50: 19 (1925).

**DISTRIBUTION:** Western Slopes (rare in the southern half) and occasionally Western Plains. Further distributed through semi-arid areas of Queensland to Cape York Peninsula and the Gulf of Carpentaria. Parasitic on a wide range of hosts but frequently recorded on *Eucalyptus* spp.

Glabrous or very rarely the pedicels and bracts minutely white-tomentose. Leaves alternate or scattered; lamina lanceolate to elliptical, 3–20 x 1–5 cm thick, isobilateral, usually glaucous, rounded at the apex, gradually attenuate at the base; petiole 0.3–1.5–(2.5) cm long. *Inflorescence* usually solitary in the axil; axis of the raceme slender, angular at the nodes, 1–3 cm long; flowers 5–20 on pedicels 3–5 mm long; bracts acute, 2 mm long. *Calyx* cylindrical; limb spreading, truncate or toothed, irregularly split, 1–2.5 mm long. *Corolla* in the mature bud 20–50 mm long, inflated in the middle. *Anthers* 3–5 mm long; free part of the filament 5–6 mm long. *Fruit* oblong-ellipsoidal, widest near the base, 10–15 mm long. *Chromosome number:*  $n = 9$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 155 (1963)). Fl. Sept.-Jan.; fr. no information.

**NORTH WESTERN SLOPES:** Near Wallangra, *Rupp* 12.1905 (56283); Warialda, *Vickery* 11.1936 (75080); "Amaroo", Warialda road, Inverell, *Hawkins* 12.1964 (80112); Inverell, *Fry* 1.1918 (56284); Terry Hie Hie, [Forester] 9.1912 (56285); Moema State Forest, 20 miles [32 km] NNE, of Narrabri, *Barrow* 11.1918 (56286); Tundabrine Creek, Warrumbungles, *Constable* 12.1961 (67389); Timor Rock, W. of Coonabarabran, *Salasoo* 2240, 1.1962 (60786); "Warrah" Station, Liverpool Plains, *Froggatt* 11.1919 & 10.1920 (56289, 56290); Quirindi, *Cadell* 6.1921 (56288). **CENTRAL WESTERN SLOPES:** Gilgandra, *Lithgow* 11.1963 (69285) in part. **SOUTH WESTERN SLOPES:** 11 miles [18 km] S. of Tumbarumba, *Dwyer* 12.1921 (56291). **WESTERN PLAINS:** Nyngan, *Armstrong* 1.1948 (56287). Further distributed through semi-arid areas of Queensland to Cape York Peninsula and the Gulf of Carpentaria.

**2. *Dendrophthoe vitellina* (F. Muell.) Tiegh.** in Bull. Soc. Bot. France 42: 87 (1895); Barlow in Austral. J. Bot. 14: 493 (1966).

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\* Not in the species from New South Wales.

SYNONYMY: *Loranthus vitellinus* F. Muell., Rept. Burdek. Exped. 12 (1860); Blakely in Proc. Linn. Soc. N.S.W. 50: 15, t. 9 (1925); Ewart, Fl. Vict. 426 (1931).

NOMENCLATURAL NOTE: This species has been known by several names; viz. Bentham, Fl. Austral. 3: 390 (1866), includes *L. vitellinus* F. Muell. as a synonym of *L. longiflorus* Desr. He is followed by Moore & Beteche, Handb. Fl. N.S.W. 228 (1893); Maiden & Beteche, Census of N.S.W. Pl. 64 (1916); F. M. Bailey, Queensl. Fl. 1378 (1902) and Ewart & Davies, Fl. N. Terr. 88 (1917). Blakely in Proc. Linn. Soc. N.S.W. 50: 15 (1925) considered *L. vitellinus* F. Muell. a separate species from *L. longiflorus* Desr. Ewart, Fl. Vict. 426 (1931), synonymized *L. longiflorus* Desr. with *L. vitellinus* F. Muell. but gave the geographical range of the latter species as "Ceylon, the Moluccas and Himalayas". He applied the latter name to a group of more than one species. Danser in Bull. Jard. Bot. Buitenz. 341 (1929) includes *L. vitellinus* F. Muell. as a synonym of *L. curvatus* Bl. Danser in Verh. Kon. Akad. Wet. Amst. 29, 6: 70 (1933) includes *L. curvatus* Bl. as a synonym of *L. falcatus* L.f. and ibid. p. 78 synonymizes *L. longiflorus* Desr. with *Dendrophthoe falcatas* (L.f.) Ettingsh.

DISTRIBUTION: Coast and adjacent ranges and occasional on the North Western Slopes near Manilla. Also from northern Queensland to far eastern Victoria (Mallacoota), in coastal localities. Parasitic on a wide range of hosts, including many introduced plants. It is probably most frequent on genera of Myrtaceae.

Glabrous except for the young parts, inflorescences and flowers (especially the calyces) shortly brown-tomentose. *Runners* usually present but commonly lacking when on myrtaceous hosts. *Leaves* alternate or scattered; lamina narrow-lanceolate to oblong, isobilateral, 4-12 x 0.6-2.5 cm, rounded at the apex, attenuate at the base; petiole 0.3-1.0 cm long. *Inflorescence* usually solitary in the axil; axis slender, angular at the nodes, 5-50 mm long; flowers 5-20 on pedicels 1.5-4 mm long; bracts concave, acute or obtuse, 1.5 mm long. *Calyx* cylindric or slightly funnel-shaped; limb truncate or weakly toothed, 1 mm long. *Corolla* in the mature bud nearly glabrous, 25-40 mm long, strongly curved. *Anthers* 3-4 mm long; free part of the filament 2-3 mm long. *Fruit* oblong-ellipsoidal, widest near the base, 10-15 mm long. *Chromosome number*:  $n = 9$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 154 (1963)). Fl. Most of year; fr. Feb.-Apr.

NORTH COAST: Acacia Creek, Dunn 3.1906 & 8.1906 & 11.1906 (56153; 56151; 56152); Tooloom Range, Maiden 12.1907 (56154); Kyogle, Vane 10.1962 (58128); Casino, McAuliffe 3.1911 (56155); c. 37 miles [59 km] SE. of the Mt Lindesay Highway (at Liston), Clarke, Pickard & Coveny 1778, 7.1969 (88175); Woodburn, Bäuerlein 6.1895 (56156); Woodford Is., Clarence R., Hadley 10.1915 (56157; 56158); Whiteman's Creek, 8 miles [13 km] E. of Ramornie, Blakely & Shiress 7.1922 (56159); Mt Mulligan, 4 miles [6.4 km] E. of Ramornie, Blakely & Shiress 7.1922 (56164); Orara R., 10 miles [16 km] S. of Ramornie, Blakely & Shiress 7.1922 (56165); between Grafton and Dalmorton, Maiden & Boorman 10.1903 (56160); Glenugie, Oxenford 8.1948 (56166); Coneac district, NW. of Gloucester, Fraser & Vickery 11.1936 (56167); Crawford R. near Bulahdelah, Cheel? (56168); Nelson Bay, Lithgow 3.1965 (74300); c. 3 miles [4.8 km] NE. of Bulga, Tindale 11.1960 (52901); Fordwick, Bulga, Foster 1420, 9.1953 (56169); East Maitland, McDonald 12.1966 (84413); Awaba, Boorman 11.1914 (56171); Belmont, Dwyer 3.1920 (56170). CENTRAL COAST: Brooklyn, Hawkesbury R., Blakely 10.1918 (56192); Hawkesbury R., Blakely 10.1918 & 8.1919 (56194; 56193); Hawkesbury R., Blakely & Shiress 1.1918 (56195-56199); Coleman's Road, Yarramundi, Constable 10.1960 (56561); between Hawkesbury R. and Cowan, Blakely & Shiress 1.1918 (56200-56202); Berowra Creek below punt, Blakely 3.1918 (56203; 56204); Berowra Creek, Blakely 3.1918 (56205-56207); Berowra Creek above punt, Blakely 3.1918 (56208); Scotland Is., Pittwater, Nelson 9.1922 (56236); Bobbin Head, Blakely, Shiress & Bott 9.1919 (56209); Asquith, Blakely 1.1918 (56172); 16-mile [26 km] post on Bobbin Head Road, N. Turramurra, Blakely 6.1917 (80113); Junction of Berowra and Connells Creeks, N. of Hornsby, Blakely 1.1918 (56173; 56174); Trig Hill, Galston Road, Hornsby, Blakely & Shiress 6.1917 (56175); Galston Road, 19-mile [30 km] post from Hornsby, Blakely & Shiress 2.1918 (56176); Fish Ponds, Hornsby, Blakely 6.1917 (56177); The Valley, Hornsby, Blakely & Shiress 2.1918 (56178); Hornsby, Blakely 10.1917 & 10.1917 & 10.1917 & 11.1917 & 12.1917 (56179; 56180; 56183; 56182; 75081; 56184); Hornsby, Blakely & Shiress 4.1918 (56181); Waitara, Blakely 8.1918 & 1.1920 (56188; 56189); St Ives, Blakely, Shiress & Bott 4.1918 (56237-56240); Warrawee, Blakely 8.1918 (56190); Pennant Hills Road, Normanhurst, Blakely 8.1918 (56186); Normanhurst, Blakely 8.1918 (56187); 1 mile [1.6 km] W. of Normanhurst [Railway] Station, Blakely & Shiress 2.1918 (56185); between Linden and Woodford, Blakely & Shiress 5.1921 (56261); Killara, Blakely 4.1918 (56241); Killara, Dixon (56242); Pennant Hills, Steel 10.1920 (56250);

Pennant Hills, *Johnson* 9.1946 (56251); Cheltenham, *Johnson* 11.1945 (56252); The Spit, *Blakely & Boorman* 8.1918 (56244-56247); Middle Harbour, *Cambage* 118, 12.1904 (56248); Emu Plains, *Cambage* 1.1900 (56263); Glenbrook, *Boorman* 10.1920 (56262); Longueville, *Breading* 8.1920 (56243); Cremorne Point, *Cleland* 8.1910 (56249); Ermington, *Blakely & Shiress* 6.1919 (56253); Meadowbank, *Blakely* 12.1917 (56254-56257); Rhodes, *Deane* 9.1884 (56258); Parramatta R., Parramatta, *Blakely & Shiress* 6.1919 (56259; 56260); Nielsen Park, Vaucluse, *Blakely* 2.1918 (56210-56218); Rose Bay, *Fletcher* (56219); Rose Bay, *Blakely* 10.1900 (56220); Botanic Gardens, Sydney, *Ward* 11.1915 (56221); Botanic Gardens, Sydney, *Blakely* 10.1917 (56222); Port Jackson district, *Kretschmann* 11.1912 (56223); Bellevue Hill, *Betche* 10.1895 (56224); Bondi, *Betche* 10.1886 (56225); La Perouse, *Boorman* 10.1918 (56226); Lakemba, *Buckingham* 10.1917 (56227); Kogarah, *Camfield* 11.1894 (56228; 80111); Carr's Paddock, Carlton, *Blakely* 3.1918 (56229; 56230; 56231; 56232); Hurstville, *Camfield* 1.1903 (56233); between Theresa Park and Werombi, *Maiden* 11.1914 (56264); Cambewarra Road, 3 miles [4.8 km] W. of Nowra, *Rodway* 10.1923 (89693); Cambewarra, *Rodway* 12.1945 (89694); Cambewarra, *Monaghan* 11.1923 (89695). SOUTH COAST: Nowra, *Truscott* 12.1902 (56234); Nowra, *Rodway* 10.1923 & 11.1923 & 6.1924 (89699; 89682; 89696); Shoalhaven R. near Showground, Nowra, *Rodway* 7.1925 (89688); Nowra Hill Road c. 4 miles [6.4 km] from Nowra, *Rodway* 1.1924 (89689); Greenwell Point Road, Nowra, *Rodway* 11.1923 (89697); Greenhills, Nowra, *Rodway* 1.1924 (89698); near Nowra, *Monaghan* 4.1924 (89702); 5 miles [8 km] S. of Nowra, *Rodway* 12.1923 (89687); 6 miles [10 km] S. of Nowra, *Rodway* 11.1924 (89686); Termeil, *Cambage* 11.1914 (56235). NORTH WESTERN SLOPES: Nandewar Range near Manilla, *Burrow* 1.1918 (56149); Manilla, *Burrill* 10.1928 (56150). Also from northern Queensland to far eastern Victoria (Mallacoota) in coastal localities.

## 8. BENTHAMINA Tiegh.

*Inflorescences* an axillary, 2-flowered, pedunculate, simple umbel with a single bract under each flower. *Corolla* 5-merous, with segments partly united but the corolla deeply split on one side, ligulate with the lobes all reflexed to the other side. *Anthers* linear, basifix, immobile. *Aerial stem-parasitic shrubs* with runners and opposite pinninerved leaves.

A monotypic genus endemic in eastern Australia.

**Benthamina alyxifolia** (F. Muell. ex Benth.) Tiegh. in Bull. Soc. Bot. France 42: 85 (1895); Barlow in Austral. J. Bot. 14: 494 (1966).

SYNONYMY: *Loranthus alyxifolius* F. Muell. ex Benth., Fl. Austral. 3: 391 (1866); Moore & Betche, Handb. Fl. N.S.W. 228 (1893); F. M. Bail., Queensl. Fl. 5: 1379 (1902); Blakely in Proc. Linn. Soc. N.S.W. 50; 21 (1925); *Amyema alyxifolium* (F. Muell. ex Benth.) Danser in Bull. Jard. Bot. Buitenz. 10: 304 (1929).

DISTRIBUTION: North Coast and ranges, south to Newcastle, mostly in rainforest and also in Queensland (to Wide Bay). Parasitic on a wide range of hosts.

Glabrous except for the inflorescence and calyx shortly and densely brown-tomentose. *Leaf-lamina* elliptical to ovate, 2.5-7.5 x 2-5 cm, somewhat shining above, recurved at the margins, rounded at the apex, abruptly contracted at the base; petiole more or less winged, 0.2-0.6-(1.0) cm long. *Inflorescences* several at the nodes; peduncle 0.5-3 mm long; pedicels 0.5-1.5 mm long; bracts erect, arising from the base of and encircling and adnate to the pedicel, 2-3 mm long. *Calyx* narrow, slightly funnel-shaped; limb truncate, 1 mm long. *Corolla* in the mature bud slender, curved, clavate, truncate, 32-42 mm long. *Anthers* 1.5-3 mm long; free part of the filament 2-3 mm long. *Chromosome number*:  $n = 9$  (Barlow in Proc. Linn. Soc. N.S.W. 88: 154 (1963)). Fl. July-Nov.; fr. Apr.

NORTH COAST: Acacia Creek, *Dunn* 7.1906 (80093); Acacia Plateau, *Barlow* 675, 10.1963 (BRIU); Northern bank of Tweed R., near Stotts Is., 9 miles [14 km] NE. of Murwillumbah, *Clarke, Pickard & Covcny* 1347, 7.1969 (88174); Tweed R., *Guilfoyle* (MEL); Murwillumbah, *Cambage* 4420, 9.1922 (80094); Murwillumbah, *Bäuerlen* 9.1896 (80095); Rous,

*Cheel* 7.1925 (80096); Lismore, 1907 (MEL); Lismore, *Bäuerlen* 8.1892 (80097); Lismore, *Rothwell* 7.1906 (80098); Lismore, *Tanner* 8.1912 (80099); Ballina, *Bäuerlen* 8.1891 & 4.1892 (20356; 80100); Richmond R., *Armit* (MEL); Clarence R., (MEL); Copmanhurst, *Blakely* & *Shiress* 7.1922 (80102; 80103); Orara R., 10 miles [16 km] S. of Ramornie, *Blakely* & *Shiress* 7.1922 (80101); Creek N. of Pine Creek State Forest near Raleigh, *McGillivray* 10.1958 (98759); Upper Hastings R., *Maiden* 11.1897 (80104; MEL); Hastings R., *Mueller* (MEL, holotype); Hastings R., *Betche* (80105); Williams R., *Fraser* & *Vickery* 1.1934 (80106); Upper Allyn R., *McDonald* 11.1953 (80107); Newcastle, *Brown* 1802-5 (80108; MEL). Also in Queensland to Wide Bay).



90	Capparidaceae	141	Rhizophoraceae
91	Resedaceae	142	Myrtaceae
92	Droseraceae	143	Melastomataceae
93	Crassulaceae	144	Onagraceae
94	Escalloniaceae	145	Haloragiaceae
95	Pittosporaceae	146	Araliaceae
96	Cunoniaceae	147	Umbelliferae
97	Davidsoniaceae	148	Alangiaceae
98	Rosaceae	149	Erieaceae
99	Mimosaceae	150	Epacridaceae
100	Caesalpiniaceae	151	Myrsinaceae
101	<i>Papilionaceae, Part I</i>	152	Primulaceae
102	Geraniaceae	153	Plumbaginaceae
103	Oxalidaceae	154	Sapotaceae
104	Linaceae	155	Ebenaceae
105	Erythroxylaceae	156	Symplocaceae
106	Zygophyllaceae	157	Oleaceae
107	Rutaceae	158	Loganiaceae
108	Simaroubaceae	159	Gentianaceae
109	Burseraceae	160	Menyanthaceae
110	Meliaceae	161	Apocynaceae
111	Tremandraceae	162	Asclepiadaceae
112	Polygalaceae	163	Convolvulaceae
113	Euphorbiaceae	164	Polemoniaceae
114	Callitrichaceae	165	Hydrophyllaceae
115	Anacardiaceae	166	Boraginaceae
116	Aquifoliaceae	167	Verbenaceae
117	Celastraceae	168	Avicenniaceae
118	Siphondontaceae	169	Labiatae
119	Hippocrateaceae	170	Solanaceae
120	Stackhousiaceae	171	Serophulariaceae
121	Ieacinaceae	172	Selaginaceae
122	Sapindaceae	173	Bignoniaceae
123	Akaniaceae	174	Pedaliaceae
124	Rhamnaceae	175	Martyniaceae
125	Vitaceae	176	Orobanchaccae
126	Elaeocarpaceae	177	Gesneriaceae
127	Tiliaceae	178	Lentibulariaceae
128	Malvaceae	179	Acanthaceae
129	Sterculiaceae	180	Myoporaceae
130	Dilleniaceae	181	Plantaginaceae
131	Eucryphiaceae	182	Rubiaceae
132	Hypericaceae	183	Caprifoliaceae
133	Elatinaceae	184	Dipsacaceae
134	Frankeniaceae	185	Cucurbitaceae
135	Violaceae	186	Campanulaceae
135	<i>Flacourtiaceae, with Supplement</i>	187	Lobeliaceae
137	Passifloraceae	188	Goodeniaceae
138	Cactaceae	189	Brunoniaceae
139	Thymelaeaceae	190	Styliadiaceae
140	Lythraceae	191	Compositae

## PTERIDOPHYTA

192	Lycopodiaceae	205	Pteridaceae
193	Sclaginellaceae	206	Adiantaceae
194	Isocotaceae	207	Vittariaceae
195	Psilotaceae	208	<i>Davalliaceae</i>
196	Ophioglossaceae	209	<i>Grammitidaceae</i>
197	Marattiaceae	210	<i>Polypodiaceae</i>
198	Osmundaceae	211	<i>Aspidiaceae</i>
199	Schizaeaceae	212	<i>Thelypteridaceae</i>
200	Gleicheniaceae	213	<i>Aspleniaceae</i>
201	<i>Hymenophyllaceae</i>	214	<i>Blechnaceae</i>
202	Cyatheaceae	215	<i>Marsileaceae</i>
203	Dicksoniaceae	216	<i>Azollaceae</i>
204	Lindsaeaceae	217	<i>Salviniaceae</i>

